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**6712-01**

**FEDERAL COMMUNICATIONS COMMISSION**

**47 CFR Parts 0 and 25**

**[FCC 15-167 and FCC 16-58]**

Comprehensive Review of Licensing and Operating Rules for Satellite Services

**AGENCY:** Federal Communications Commission.

**ACTION:** Final rule.

**SUMMARY:** The Federal Communications Commission comprehensively streamlines its rules governing licensing and operation of satellites and earth stations to foster more rapid deployment of services, greater investment, and new innovation.

**DATES:** Effective **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. The incorporation by reference of certain publications listed in the rule is approved by the Director of the Federal Register as of **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

**FOR FURTHER INFORMATION CONTACT:** Clay DeCell, 202-418-0803, or if concerning the information collections in this document, Cathy Williams, 202-418-2918.

**SUPPLEMENTARY INFORMATION:** This is a summary of the Commission's Second Report and Order, FCC 15-167, adopted and released December 17, 2015, and Erratum, FCC 16-58, released May 6, 2016. The full text of the Report and Order is available at [https://apps.fcc.gov/edocs\\_public/attachmatch/FCC-15-167A1.pdf](https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-167A1.pdf), and the text of the Erratum at

339238A1.pdf. They also are available for inspection and copying during business hours in the FCC Reference Information Center, Portals II, 445 12th Street SW., Room CY-A257, Washington, DC 20554. To request materials in accessible formats for people with disabilities, send an email to [FCC504@fcc.gov](mailto:FCC504@fcc.gov) or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (TTY).

### Synopsis

In a Notice of Proposed Rulemaking (NPRM), 79 FR 65106, the Commission proposed comprehensive changes to its rules and policies governing space stations and earth stations. This Report and Order adopts new rules on the basis of the established record and with the purpose of updating, simplifying, and streamlining the Commission's regulation of satellite services and of reducing burdens on applicants, licensees, and the Commission, consistent with the public interest.

### Two-Step Application Process for Advance ITU Filings

We adopt a modified version of the two-step application process proposed in the NPRM. Any party seeking a geostationary-satellite orbit (GSO) space station license from the Commission to provide fixed-satellite service (FSS) in non-planned frequency bands may submit advance publication of information (API) materials to the Commission for forwarding to the International Telecommunication Union (ITU) before submitting a corresponding license application. This initial submission must include a letter request for filing of the API and a signed cost-recovery declaration. The Commission will process and forward up to five APIs from an entity if not accompanied by a Coordination Request and will not assess mutual exclusivity issues. The filing of API materials with the

Commission will not establish priority in the Commission's first-come, first-served queue and will not require a fee. Instead, queue status will be established upon filing of Coordination Request materials, as described below.

In order to establish and perfect a queue position under the new, optional, two-step application process, an applicant must submit a draft Coordination Request filing to the Commission, using simplified Form 312 (Main Form), pay the license application fee, and post a \$500,000 bond. This first-step application submission will establish a place in the space station application processing queue as of the time that the International Bureau receives the Form 312 and Coordination Request materials. A party submitting an API filing request to the Commission may file associated Coordination Request materials at the same time or at any time within two years of API submission to the ITU. As with APIs, the International Bureau will forward potentially conflicting Coordination Requests to the ITU and issue a public notice announcing that submission. If an applicant later modifies the submitted Coordination Request materials to change the proposed orbital location or to add frequencies, we will reset the queue position for the new or modified operations to the date of receipt of the modified Coordination Request materials by the Commission. We include in this category any modification to the proposed satellite network for which the ITU would require an amended API and would reset the receivable date of the associated Coordination Request, thus delaying the earliest possible date of priority for international coordination. An applicant that has submitted Coordination Request materials and an initial Form 312 to the Commission will be entitled to a refund of the application fee paid if the applicant notifies the Commission that it no longer

wishes to keep its application on file before the Commission has issued a public notice announcing that the Coordination Request materials have been submitted to the ITU.

As we observed in the NPRM, the information provided in a Coordination Request is not sufficiently detailed to enable the Commission to determine mutual exclusivity with other space station applications. The queue position of a Coordination Request is, therefore, provisional until the application has been completed. For bands in which we apply two-degree spacing requirements, we will presume that a full application is mutually exclusive with a Coordination Request for co-frequency space station operation within two degrees of orbital separation. Final determination on mutual exclusivity will be done after the full application associated with the Coordination Request is received by the Commission.

The final step is to submit a complete space station license application for operation using the orbital location, frequency bands, and polarization proposed in the Coordination Request, including the information required by 47 CFR 25.114 and 25.140, and the full application fee, within two years of the filing of the initial Coordination Request materials with the Commission.

If a party conveys to the Commission that it no longer wishes to use an API or Coordination Request submitted to the ITU at its request, or if an applicant fails to submit the information required by the second step of the licensing process within the two-year period, any queue status based on the Coordination Request filing will be nullified. In that case, we will issue a public notice announcing any nullification of an applicant's position in the queue and the availability of the API and/or Coordination Request filings and will allow the first party to submit a letter request and cost-recovery declaration to

use them. An applicant accepting such abandoned ITU filings will be required to accept any attendant ITU cost-recovery obligations that have not yet been incurred in connection with the filings. In addition, the queue priority date for the applicant accepting the filings will be established as of the time of its request for use of the filings, if it submits an application-stage bond within the 30-day period, or as of the time it submits a complete space station application. We will follow this same procedure if an applicant submitting Coordination Request materials to the Commission fails to file a copy of the required bond with the Commission within 30 days after release of the public notice announcing that the Commission has filed the Coordination Request with the ITU.

#### Application-Stage Bond

We adopt an application-stage bond requirement as a financial qualification requirement pursuant to our authority under 47 U.S.C. 154(i), 303(r), and 308(b). The bond is part of the initial set of materials – which also includes the simplified FCC Form 312, Main Form, the application fee, and the Coordination Request – that, when submitted, will secure the prospective licensee priority in the Commission’s application processing queue. As such, the submission of these materials constitutes the first step of a two-step procedure for filing a satellite license application.

A party that defaults on its obligation to timely file an acceptable application for the operation proposed in a Coordination Request, or Appendix 30B filing as noted below, must forfeit the value of the application-stage bond. We will not allow escrow accounts or letters of credit to satisfy the application-bond requirement. We will release the application-stage bond upon finding that a timely filed application is acceptable for filing, rather than maintaining the bond until the application is ultimately granted.

We will set the application-stage bond amount at \$500,000. We will require the \$500,000 bond to be posted within 30 days of the release of the public notice announcing that the Coordination Request has been submitted to the ITU. If an applicant fails to timely post the application-stage bond, we will issue a public notice announcing the nullification of that applicant's position in the queue and the availability of the API and Coordination Request filings and will allow the first subsequent party to submit a letter request and cost-recovery declaration to use them. Finally, we will establish an appropriate queue position for all complete requests for submission of Coordination Request materials, and therefore require an application-stage bond for all such requests.

#### Other Mechanisms to Deter Warehousing

In light of our adoption of an application-stage bond requirement, we will not apply the "Three-Strikes" rule in 47 CFR 25.159(d) to instances in which a complete application is not timely filed after an initial Coordination Request. We also will not include Coordination Request filings in the five-item limit on pending applications and unbuilt authorizations in a particular frequency band, which we eliminate below. Nonetheless, an applicant that has triggered the presumption of the Three-Strikes rule due to repeatedly failing to meet its milestone obligations will be subject to the lowered limit on space station license applications, including first-step filings.

We will, however, limit to five the total number of API filings that a party may request to be submitted through the United States without also timely submitting associated Coordination Request materials and a bond. We will not apply this five-item limit on APIs alone on a per-frequency-band basis. To prevent manipulation of this limit

by separate but affiliated entities, we will also apply the attribution criteria in 47 CFR 25.159(c) to entities requesting API filings.

#### Confidentiality

We adopt our proposal to treat ITU filing requests as confidential only until the Commission submits the filings to the ITU. We generally will make available the API and Coordination Request information once it has been forwarded to the ITU. In cases where the API and Coordination Request are submitted separately, however, we will not disclose the identity of the party requesting the API until after the Coordination Request has been submitted. For Coordination Requests, we will also issue a public notice announcing the submission to the ITU and noting the queued application. Finally, if a later party files without knowledge of an earlier Coordination Request filing with queue priority, we will entertain requests by the later party to withdraw the filing, and cancel any associated bond, within 30 days of the public notice announcing the higher queue priority applicant.

#### Non-U.S. Licensed Space Stations

We will afford queue priority to space station license applicants that initiate their applications by submitting Coordination Request materials to the Commission for filing at the ITU. Accordingly, if a non-U.S. licensed operator files a request for access to the U.S. market after the filing of a first-step application that is deemed mutually exclusive, we generally will defer action on the market access request until after we have resolved the earlier-filed application or mutual exclusivity concerns have been eliminated through coordination between the parties involved. This is true even in cases where the foreign operator makes use of an ITU filing with an earlier date of protection than the U.S. filing

relied upon by the applicant. We employ this queue procedure today when considering a request for access to the U.S. market vis-à-vis an earlier space station license application. Any U.S. license granted, however, will be subject to the outcome of the international coordination process. This may mean that the U.S. licensee may not be able to operate its system if the coordination cannot be appropriately completed.

#### Scope of Advance ITU Filing Procedure

For “NGSO-like” space station operation, we will submit API and Coordination Request filings prior to receiving a corresponding space station license application. Under 47 CFR 25.157, applications for such space stations are not eligible for first-come, first-served processing, and the information contained in an API or Coordination Request would be insufficient to begin a modified processing round. Therefore, the submission of ITU filings for systems proposing “NGSO-like” operation will not establish any status in the Commission’s licensing process. Similarly, we will review and forward filings in bands subject to Appendices 30 and 30A of the ITU Radio Regulations in advance of a license application, and without affording any licensing status, as applications for such Direct Broadcast Satellite systems are also presently not eligible for first-come, first-served processing.

For ITU filings in the FSS bands subject to Appendix 30B, we will follow an optional procedure similar to that adopted for non-planned band operation. Thus, ITU filings to convert an allotment into an assignment, to introduce an additional system, or to modify an assignment in the Appendix 30B List will be treated in the same manner as a Coordination Request filing for GSO FSS operation in non-planned bands. Such filings, accompanied by a simplified Form 312 (Main Form), demonstration or certification



described in the following paragraph, and an application-stage bond, will establish a position in the Commission's space station licensing queue. The bond will similarly be forfeited in the event the party does not submit a complete space station application within two years.

Unlike Coordination Requests in non-planned bands, however, we will review a proposed filing under Appendices 30, 30A, or 30B prior to forwarding the filing to the ITU to ensure that it is compatible with other U.S. filings. This review is necessary to protect the rights of existing U.S. filings from being unduly eroded under the relevant ITU protection criteria by another U.S. filing. Accordingly, the party requesting a planned-band filing must either submit the results of an analysis demonstrating that the proposed operation will not "affect" any other U.S. filing under the relevant ITU criteria or, if another filing would be deemed affected, submit a letter signed by the affected operator (which may be the same as the operator requesting the new filing) that it consents to the new filing.

Finally, we will apply the API and Coordination Request procedures described above, including the bond requirement and queue status, to filings and applications for 17/24 GHz BSS space stations, for the same reasons that we are applying them to GSO FSS filings and applications in non-planned bands. The Commission has established a four-degree orbital spacing environment for the 17/24 GHz BSS. Accordingly, we will presume that a full 17/24 GHz BSS space station application is mutually exclusive with a Coordination Request for co-frequency space station operation within four degrees of orbital separation. Final determination on mutual exclusivity will be done after the full application associated with the Coordination Request is received by the Commission.

### Milestone Schedules

We will retain only the final milestone requirements to launch and operate the authorized space stations for both GSO and non-geostationary satellite orbit (NGSO) system licensees. We will not allow licensees to submit milestone showings as a means to reduce the surety bond. For GSO systems, licensees will be required to launch and operate the authorized space station(s) within five years from the date the license is issued. For NGSO systems, licensees will be required to operate the complete constellation within six years of grant. Consistent with our current rules, we will impose the same simplified milestone requirements on grants of access to the U.S. market via proposed non-U.S. licensed space stations. We expect that any requests for an extension of time to meet the final milestone requirement will be filed near to the deadline and will demonstrate that, despite the licensee's or market access recipient's diligent efforts, circumstances beyond its control prevent compliance with the milestone requirement.

### Milestone Certifications and Other Milestone Proposals

We will not adopt any of the proposals to specify elements of sufficient demonstrations for the contract execution, CDR, and construction commencement milestone requirements. Nor will we allow a licensee to satisfy the final milestone requirement in a new GSO space station authorization by operating any "healthy" satellite at the authorized orbital location, rather than constructing and launching the satellite it had proposed.

### Escalating Bond

We adopt an escalating post-grant bond requirement. By increasing over time the potential payment liability under the bond, an escalating bond will create a financial

incentive for unprepared or speculative licensees, or licensees whose business plans change, to surrender their authorizations early.

#### Bond Amounts

We will specify an initial bond payment liability of \$1 million for both GSO system licensees and NGSO system licensees under our modified escalating bond requirement. We believe that this amount is substantial enough to deter many applicants from filing applications for strategic motives with the intention of surrendering their licenses shortly after grant. Licensees that do repeatedly surrender their authorizations before satisfying the final milestone requirements may be subject to a lower limit on additional space station applications under the “Three-Strikes” rule.

We will also retain the current bond amounts of \$3 million for GSO system licenses and \$5 million for NGSO system licenses as the final payment amounts potentially due under the escalating bond. We will not adopt SpaceX’s suggestion to create a separate bond category for “NGSO broadband satellite systems.”

We will not adopt our proposal to require bond payment amounts due in the event of default to be indexed based on the Gross Domestic Product Chain-type Price Index, which was opposed by all commenting parties. We prefer instead to retain stable payment amounts. This structure is simpler and should provide licensees greater certainty as to their potential liability without significantly reducing the deterrence of the bond requirement.

Under the modified bond requirement, a GSO system licensee must file a surety bond requiring initial payment in the case of license surrender of at least \$1 million. The payment amount due to the U.S. Treasury under the bond will increase, pro rata, in

proportion to the time that has elapsed since the license was granted to the time of the launch and operate milestone. The amount of the bond itself at any given time, however, must be sufficient to cover the amount due to the Treasury if the licensee were to surrender its license, and may be set at a fixed value that is increased yearly to cover the maximum potential liability in the upcoming year. The payment due upon failing to meet the milestone to launch and operate the authorized space station after five years will be \$3 million. Thus, for example, if a GSO system licensee surrenders its authorization two years after grant, the amount due would be equal to the \$1 million baseline amount plus a pro rata amount of the remaining \$2 million maximum, or  $\$1,000,000 + \$2,000,000 \times (2 \text{ (years)} / 5 \text{ (years)})$ , or \$1,800,000.

NGSO system licensees will be required to post a surety bond requiring initial payment in the case of surrender of at least \$1 million as well. Payment liability will increase, pro rata, in the same manner, to a final bond payment value of \$5 million after six years. In addition to these changes for U.S. licensees, we also make consequential changes to the bond requirements for proposed non-U.S. licensed space stations that have been granted access to the U.S. market but are not in orbit and operating.

We believe that an escalating bond requirement in the amounts we are prescribing, combined with the simplified milestone schedules, will deter warehousing of satellite spectrum more efficiently than is done today.

#### Treatment of Licensees with Outstanding Interim Milestone Requirements

We will apply the modified bond and milestone requirements to space station licenses and grants of market access granted after the new rules come into effect. In addition, we anticipate that space station licensees and market access recipients with

existing grants at the time the new rules come into effect may also wish to proceed under the new bond and milestone regime. In that case, the space station grantee would submit a letter request to replace its current milestone schedule and bond obligation with the single, final milestone and escalating bond requirement. In addition, the space station operator would submit a new or modified bond and be relieved of the obligations under its previous milestone schedule. Existing licensees and market access recipients will also have the option to continue under the bond and milestone conditions established in their grants under the rules currently in effect.

#### Treatment of Authorizations with Pending Milestone Determinations

Pending before the International Bureau and the Commission are a number of requests for interim milestone determinations for space station licenses and market access grants that have been surrendered, in some cases years ago. See 115 LICENSE SUBSIDIARY, LLC, 17/24 GHz Broadcasting-Satellite Service Space Station at the 115.0° W.L. Orbital Location; Ruling on Milestones Completion, Order, 30 FCC Rcd 2759 (Int'l Bur. 2015) (application for review pending); EchoStar Corporation, IBFS File Nos. SAT-LOA-20020328-00052, SAT-LOA-20020328-00051, SAT-LOA-20070105-00001, SAT-LOA-20070105-00003, SAT-LOA-20020328-00050; Hughes Network Systems, LLC, IBFS File No. SAT-LOA-20111223-00248. Processing these requests as required by 47 CFR 25.164 is extraordinarily time-consuming and resource-intensive, as we have previously noted. And, each of these licenses and grants has been surrendered and made available to others, thus minimizing “warehousing” concerns. Accordingly, we direct the International Bureau to dispose of these pending milestone determination requests by waiving the requirements of 47 CFR 25.164 as needed. These licensees and

grantees, of course, will forfeit the remainder of their respective bonds, for which no interim milestone showings have been made.

To encourage further the surrender of licenses granted under the current bond and milestone regime that will not ultimately be put to use, we also direct the International Bureau to consider waiving 47 CFR 25.164 as appropriate regarding milestone demonstrations submitted prior to the adoption of this Second Report and Order for all licenses and market access grants surrendered within 30 days of release of this Second Report and Order.

#### Retaining the Two-Degree Spacing Policy

We retain our longstanding policy of applying routine technical criteria for GSO FSS operation premised on two-degree orbital separation between space stations, which applies to all U.S.-licensed space station operations and to non-U.S. licensed space station operations that fall within the scope of a grant of U.S. market access.

#### Continuation of Non-Routine Operations

We adopt the proposal to allow continued transmissions above routine levels upon notice to the Commission, even if such levels are not coordinated with later applicants and petitioners for market access. Space station operators may provide valuable service to users with very small earth station antennas that is not compatible with operation of co-frequency, co-coverage space stations separated by two degrees and transmitting at routine power density levels. Such non-routine operations may be performed without causing harmful interference to other users and in accordance with any coordination agreements required under ITU Radio Regulations and Commission rules or policies. If future operators are given adequate notice of such pre-existing, non-routine operation, we

do not believe it serves the public interest to require the existing system to reduce transmit power density levels to protect a later-authorized, two-degree compliant operator, in a manner that may preclude continued provision of the service, in the event the two operators do not come to a successful coordination. Indeed, continuation of such existing operations would promote continuity of service and encourage capital investment. At the same time, we wish to preserve the benefits of expedited processing and reduced costs that accompany the policy of establishing routine transmission criteria for two-degree orbital spacing.

To accommodate this dual goal, we will modify the two-degree spacing policy as follows. An operator of a GSO FSS space station in the conventional or extended C-bands, conventional or extended Ku-bands, or conventional Ka-band may notify the Commission of its non-routine transmission levels and be relieved of the obligation to coordinate such levels with later applicants and petitioners for market access. The letter notification must include the downlink off-axis equivalent isotropically radiated power (EIRP) density levels or power flux density levels and/or uplink off-axis EIRP density levels, specified per frequency range and space station antenna beam, that exceed the relevant routine limits. Once the International Bureau receives the notification, it will issue a public notice announcing the filing. Non-routine transmissions notified pursuant to this procedure need not be coordinated with operators of authorized co-frequency space stations that filed their complete applications or petitions for market access after the date of filing of the notification with the Commission. Such later applicants and petitioners must accept any additional interference caused by the notified non-routine operations, but need not restrict their own transmissions below routine levels to afford

greater protection to the incumbent. This procedure will afford existing, non-routine operations a measure of certainty regarding future provision of the service, while preserving for new space station operation the application processing and competitive benefits of providing service at default transmission levels in these bands. In addition, to support continuity of service when non-routine operations are transferred to a replacement space station, we will permit the replacement to operate up to the notified transmission levels of the space station being replaced. In the case of a space station license applicant that files its application without knowledge of a prior-filed notification of non-routine transmission, we will allow the applicant to withdraw its application and receive a refund of any fee paid, to avoid an unfairness that might otherwise arise in this regard.

We recognize that this procedure does not ensure full protection for existing, non-routine operations, notably sensitive earth station receive operations. We refrain at this time, however, from establishing greater protection rights for non-routine operations than can be negotiated through coordination. We expect that the procedure for continuation of non-routine transmissions we adopt here will encourage parties to reach coordination agreements that will preserve to the maximum extent possible the continuity of existing services. If difficulties arise that threaten to disrupt an established service, parties may always bring the matter to the Commission for assistance in finding a mutually satisfactory solution.

#### Routine Criteria for Downlink Transmission

We adopt our proposal to remove the routine limits on the power density of downlink transmission in the conventional Ku-band and conventional Ka-band from 47



CFR 25.134, 25.138, and 25.212 and insert them in 47 CFR 25.140 as coordination triggers for space station applicants and licensees. In addition, we adopt SES's suggested increases for the proposed limits on digital transmissions in the conventional and extended C-bands and the conventional and extended Ku-bands, excluding in both cases the Appendix 30B planned bands. To the extent that space station operators have negotiated coordination agreements for operation in the extended Ku-band at levels that exceed the routine limits we are adopting, such operation may continue as far as these coordination agreements remain in effect.

Because of the specific the Appendix 30B plan applicable to 4500-4800 MHz, 6725-7025 MHz, 10.70-10.95 GHz, 11.20-11.45 GHz, and 12.75-13.25 GHz bands, however, and to avoid harming U.S. filings under Appendix 30B, we will not apply routine downlink criteria to these bands.

#### Certification of Two-Degree Compatibility

We adopt our proposal to require space station applicants to certify compliance with routine limits in lieu of providing a two-degree spacing interference analysis. Thus, for operation in the covered frequency bands, other than analog video operation, at a location two degrees or more from the nearest co-frequency space station, GSO FSS space station applicants will be required to provide a certification that both downlink and uplink operations will not exceed applicable routine limits unless the non-routine uplink and/or downlink operation is coordinated with operators of authorized space stations within six degrees of their assigned orbital location. We decline the proposal to accept an interference analysis in place of this initial certification. In case difficulties arise during the required coordination, a space station grantee that intends to operate in excess of

routine limits may still submit an analysis demonstrating that the proposed operation will not cause harmful interference to a non-consenting operator and request that the Commission permit the non-routine operations. Finally, we note that the requirement for space station applicants to provide a certification of two-degree spacing compatibility does not replace the sharing demonstration or certification required from earth station applicants by 47 CFR 25.203(k).

We also adopt the proposal to require applicants for operation of 17/24 GHz BSS space stations to certify compatibility with the four-degree spacing environment for that service. This certification, based on the downlink PFD limits in 47 CFR 25.208(w) and uplink EIRP density limits in 47 CFR 25.223(c), similarly will provide additional flexibility to operators and reduce administrative burdens on applicants and the Commission.

#### Geographic Scope of Operations Covered by the Two-Degree Spacing Policy

We will not limit the applicability of the two-degree spacing rules to beams that cover, alone or collectively on the same satellite, all of the entire contiguous United States (CONUS). We note that two-degree spacing rules apply only to those non-U.S. licensed space station operations that fall within the scope of a grant of U.S. market access under the Commission's DISCO II policy. Thus, transmissions between non-U.S. licensed space stations and non-U.S. earth stations are not subject to the policy, and U.S.-licensed operators and applicants need not take these operations into account for purposes of a two-degree spacing analysis or certification. For two U.S.-licensed space stations, however, the default two-degree spacing rules apply to operations anywhere in the world. We believe that the benefits of expedited processing and reduced costs for U.S.

applicants that are created by the policy also apply to proposed non-U.S. licensed operations with any U.S.-licensed earth station.

#### Limits on Aggregate EIRP Density

We anticipate that sharing situations may sometimes arise where a space station employing wide-area beams will operate adjacent to one or more spot beam satellites with multiple co-frequency transmitting earth stations lying within the victim satellite's receiving beam, but not in the same target satellite receiving beam. In such situations, the wide-area-beam satellite system may be subject to aggregate off-axis emissions that exceed the limit permissible for a single earth station. Although we expect that these instances will be infrequent, and that the interference will be largely mitigated by factors such as the decreased G/T of the wide-area beam and the gain roll-off over the service area, we cannot predict in advance its extent or how problematic it may be. If interference due to aggregate off-axis emissions from earth stations transmitting to another satellite does occur, both operators must cooperate fully in order to coordinate their systems so that each may continue its operations. However, coordination will not be required unless the aggregate interference into the receiving beam of the victim satellite, from all co-frequency earth stations transmitting simultaneously to the same target satellite, exceeds the interference that would be generated by a single earth station located at the peak of the victim satellite's receiving antenna beam, and transmitting at the maximum off-axis EIRP density permitted under the relevant rule Section.

#### Permitted Space Station List

We expand the definition of the Permitted Space Station List to include all GSO FSS space stations licensed or granted U.S. market access in bands where we will have

routine licensing criteria for earth stations, i.e., the extended and conventional C-bands, the extended and conventional Ku-bands, the conventional Ka-band, and the 24.75-25.25 GHz band. We will include in the Permitted List designation all non-U.S. licensed space stations that have been granted U.S. market access in these bands, whether the market access is accomplished through a declaratory ruling or a U.S. earth station license. Thus, consistent with our treatment of U.S.-licensed space stations, non-U.S. licensed operators will not need to request specific inclusion on the Permitted List. We also specify that all requests for market access by the space station operator must be submitted through a petition for declaratory ruling, rather than through a Letter of Intent.

#### Assignments and Transfers of Control of Station Authorizations

We will not require prior approval for pro forma assignments and transfers of control of common carrier space station and earth station licenses when the licensee meets the definition of “telecommunications carrier” in the Act. Rather, the pro forma assignee or entity that has undergone a pro forma change in ownership must file a notification within 30 days of consummation of the transaction. The notification must be provided in a Form 312, Main Form and Schedule A and include a certification that the transfer of control or assignment was pro forma and that, together with all previous pro forma transactions, it did not result in a change in the actual controlling party. Such notifications will not be subject to application fees. Updated ownership information must also be provided as necessary to ensure that the Commission’s records are kept accurate. After receipt of the Form 312, Main Form and Schedule A and any necessary attachments, the Commission will place the notification on public notice as granted. Any

interested party that objects to the transaction may, within 30 days from the date upon which public notice is given, file a petition requesting reconsideration.

In addition, we adopt the proposal to deem granted, one business day after filing, all applications for pro forma transfer or assignment of non-common carrier space station and earth station licenses. Pro forma transfer applications do not raise public interest concerns, and the Commission's review is limited to determining that they are, in fact, pro forma in nature. Confirmation that the transaction is pro forma may be accomplished during the reconsideration period. To qualify for this procedure, in addition to the other application requirements, parties must certify that the transfer of control or assignment is pro forma and that, together with all previous pro forma transactions, it will not result in a change in the actual controlling party. The transfer must also not require the Commission to issue any waiver or a declaratory ruling. We will indicate grant of such applications in periodic public notices, and interested parties, and the Commission, will have an opportunity to challenge or revisit the grant.

#### Earth Station Construction Notification

In the event that an earth station is routinely licensed pursuant to input power density and antenna gain criteria, and the tested performance of the antenna on-site does not fully comply with those antenna gain criteria, we will allow the construction notification requirement in 47 CFR 25.133 to be satisfied if the input power density is reduced such that, when added to the tested antenna gain pattern, the calculated EIRP density levels fall within the relevant EIRP density envelope.

#### Satellite End-of-Life Disposal

We modify 47 CFR 25.283(c) to delete the word “all” in “all stored energy sources,” and change “and other appropriate measures” to “or other appropriate measures.” In doing so, we permit a satellite to maintain de minimis propellant or pressurant upon disposal. We expect to rely on technical guidance from other sources, including the NASA Technical Standard, Process for Limiting Orbital Debris, NASA-STD-8719.14A and any revisions thereof, to determine whether a space station license applicant’s plan to deplete onboard sources of stored energy at satellite end of life will comply with 47 CFR 25.283(c).

#### Pending Applications

We will apply the rules and procedures we adopt in this Second Report and Order to pending space station and earth station applications. Applying our new rules and procedures to pending space station applications will not impair the rights any applicant had at the time it filed its application. Nor will doing so increase an applicant’s liability for past conduct.

#### Paperwork Reduction Act

This document contains new and modified information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. It will be submitted to the Office of Management and Budget (OMB) for review under Section 3507(d) of the PRA. OMB, the general public, and other Federal agencies will be invited to comment on the new or modified information collection requirements contained in this proceeding in a separate Federal Register notice.

Pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, see 44 U.S.C. 3506(c)(4), we previously sought specific comment on how the

Commission might further reduce the information collection burden for small business concerns with fewer than 25 employees. We received no comments on this issue. We have assessed the effects of the revisions adopted that might impose information collection burdens on small business concerns, and find that the impact on businesses with fewer than 25 employees will be an overall reduction in burden. The amendments adopted in this Report and Order eliminate unnecessary information filing requirements for licensees and applicants; eliminate unnecessary technical restrictions and enable applicants and licensees to conserve time, effort, and expense in preparing applications and reports. Overall, these changes may have a greater positive impact on small business entities with more limited resources.

#### Congressional Review Act

The Commission will send copies of this Report and Order to Congress and the General Accountability Office pursuant to the Congressional Review Act, 5 U.S.C. 801(a)(1)(A), and will send a copy including the final regulatory flexibility act analysis to the Chief Counsel for Advocacy of the Small Business Administration, in accordance with Section 603(a) of the Regulatory Flexibility Act, 5 U.S.C. 601, et seq. (1981).

#### Final Regulatory Flexibility Analysis

As required by the Regulatory Flexibility Act (RFA), an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the Further Notice of Proposed Rulemaking in the Matter of Comprehensive Review of Licensing and Operating Rules for Satellite Services. The Commission sought written public comment on the proposals in the NPRM, including comment on the IRFA. No comments were received on the IRFA. This Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.

### Need for, and Objectives of, the Rules

This Order adopts comprehensive changes to part 25 of the Commission's rules, which governs licensing and operation of space stations and earth stations for the provision of satellite communication services. We revise the rules to, among other things, expedite international coordination of proposed satellite networks; eliminate burdens associated with our milestone requirements; more effectively deter warehousing under our post-licensing bond requirement; ensure continuity of service of satellite operations; and clarify and expand routine earth station licensing procedures.

This Order revises multiple sections of part 25 of the rules. Specifically, it revises the rules to:

- 1) Allow space station applicants to file through the Commission a satellite network with the International Telecommunication Union up to two years before filing a complete and detailed space station application with the Commission.
- 2) Eliminate all of the space station construction milestones, except for the requirement to bring the space station(s) into operation at the assigned location(s) within a specified period of time.
- 3) Modify the space station bond requirements to increase liability over time to provide better incentives against spectrum warehousing.
- 4) Modify the two-degree spacing policy to permit continued operation of a non-two-degree compliant satellite network to the extent that the transmission levels are notified to the Commission, even if a later applicant does not consent to the higher levels.



- 5) Eliminate the requirement for a space station applicant that starts constructing its satellite prior to filing an application with the Commission to notify the Commission in writing that it is doing so at its own risk and expense.
- 6) Clarify the requirements to limit aggregate uplink power density from multiple earth stations transmitting to the same satellite.
- 7) Provide for the automatic grant of applications for repositioning of space stations with a small offset from the originally authorized orbital location, and for minor repointing of space station antennas.
- 8) Allow earth station operators to communicate with a replacement satellite that is deployed with a small offset from the originally authorized satellite without prior Commission authorization.
- 9) Extend the frequency bands in which “routine” earth station licensing is permitted.
- 10) Expand routine earth station license qualification options for applicants for earth station operation in the 18.3-18.8 GHz, 19.7-20.2 GHz, 28.35-28.6 GHz, and 29.25-30.0 GHz bands.
- 11) Clarify earth station off-axis antenna radiation pattern requirements, and the ranges over which the off-axis radiated power can exceed the specified limits.
- 12) Require earth station applicants to file off-axis antenna radiation charts instead of tables except in off-axis angular regions where the off-axis radiation exceeds specified limits.
- 13) Eliminate the requirement for portable earth station manufacturers to demonstrate compliance with the radiated power limits in Section 25.204 of the Commission’s rules.

- 14) Lower the minimum permissible elevation angle for earth stations operating in bands not shared with terrestrial services or in which satellite networks operate bidirectionally from five degrees to three degrees above the horizontal plane.
- 15) Eliminate the restrictions on the center frequencies on which analog video transmissions in the 3700-4200 MHz band can be conducted.
- 16) Eliminate the restrictions on space station antenna polarization for space stations operating in the 3700-4200 MHz and 5925-6425 MHz bands, and the associated compliance demonstration requirements in the space station application form.
- 17) Eliminate the cross-polarization requirement associated with FSS space stations.
- 18) Update and improve definitions.

#### Summary of Significant Issues Raised by Public Comments in Response to the IRFA

No party filing comments in this proceeding responded to the IRFA, and no party filing comments in this proceeding otherwise argued that the policies and rules proposed in this proceeding would have a significant economic impact on a substantial number of small entities. The Commission has, nonetheless, considered any potential significant economic impact that the rule changes may have on the small entities which are impacted. On balance, the Commission believes that the economic impact on small entities will be positive rather than negative, and that the rule changes move to streamline the part 25 requirements.

#### Response to Comments by the Chief Counsel for Advocacy of the Small Business Administration

Pursuant to the Small Business Jobs Act of 2010, the Commission is required to respond to any comments filed by the Chief Counsel for Advocacy of the Small Business

Administration, and to provide a detailed statement of any change made to the proposed rules as a result of those comments. The Chief Counsel did not file any comments in response to the proposed rules in this proceeding.

#### Description and Estimate of the Number of Small Entities to Which the Rules May Apply

The RFA directs agencies to provide a description of, and, where feasible, an estimate of, the number of small entities that may be affected by the rules adopted herein. The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.” In addition, the term “small business” has the same meaning as the term “small business concern” under the Small Business Act. A small business concern is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA). Below, we describe and estimate the number of small entity licensees that may be affected by the adopted rules.

#### Satellite Telecommunications and All Other Telecommunications

The rules adopted in this Order will affect some providers of satellite telecommunications services. Satellite telecommunications service providers include satellite and earth station operators. Since 2007, the SBA has recognized two census categories for satellite telecommunications firms: “Satellite Telecommunications” and “Other Telecommunications.” Under the “Satellite Telecommunications” category, a business is considered small if it had \$32.5 million or less in annual receipts. Under the “Other Telecommunications” category, a business is considered small if it had \$32.5 million or less in annual receipts.

The first category of Satellite Telecommunications “comprises establishments primarily engaged in providing point-to-point telecommunications services to other establishments in the telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications.” For this category, Census Bureau data for 2007 show that there were a total of 512 satellite communications firms that operated for the entire year. Of this total, 482 firms had annual receipts of under \$25 million.

The second category of Other Telecommunications is comprised of entities “primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation. This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems. Establishments providing Internet services or voice over Internet protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry.” For this category, Census Bureau data for 2007 show that there were a total of 2,383 firms that operated for the entire year. Of this total, 2,346 firms had annual receipts of under \$25 million. We anticipate that some of these “Other Telecommunications firms,” which are small entities, are earth station applicants/licensees that will be affected by our adopted rule changes.

We anticipate that our rule changes will have an impact on earth and space station applicants and licensees. Space station applicants and licensees, however, rarely qualify under the definition of a small entity. Generally, space stations cost hundreds of millions

of dollars to construct, launch and operate. Consequently, we do not anticipate that any space station operators are small entities that would be affected by our actions.

Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

The Order adopts a number of rule changes that will affect reporting, recordkeeping and other compliance requirements for earth and space station operators. Most changes, as described below, will decrease the burden for all businesses operators, especially firms that hold licenses to operate earth stations.

We streamline and reorganize the rules to facilitate improved compliance. First, the Order simplifies information collections in applications for earth station licenses, and increases the number of earth station applications eligible for routine processing. Specifically, the Order eliminates reporting requirements that are more burdensome than necessary. For example, because it may be more convenient for some applicants to qualify for routine licensing based on certification of conformance with off-axis gain and input power density criteria than to submit data to demonstrate compliance with routine off-axis EIRP density limits, we incorporate alternative off-axis gain and input power density criteria in the rules for applicants for earth stations transmitting to geostationary satellites in the 28.35-28.6 GHz and/or 29.25-30.0 GHz bands. Thus, an applicant for such earth stations can qualify for routine licensing either by demonstrating that it will meet the off-axis EIRP density criteria or by certifying conformance with off-axis gain standards and specifying input power density consistent with the proposed criteria.

Another example is that we see no reason to require earth station antenna gain to be measured in all directions. We, therefore, delete language that may ambiguously imply

requirements beyond the intended rules. Additionally, we amend a provision to require gain to be measured at the bottom and top of each band assigned for uplink transmission, but eliminate the required measurement at the middle of the allocated frequency band. The Order also expands routine licensing eligibility to include “extended C-band” earth stations.

We amend the rules to allow earth station operators to slightly repoint their antennas without prior approval for communication with a GSO replacement satellite within  $\pm 0.15^\circ$  of the originally authorized location. We also eliminate the need to license receive-only earth stations communicating with non-U.S. licensed space stations approved for U.S. market access. We clarify that provisions to qualify for routine licensing for earth station applicants proposing to transmit in the conventional C-band, the conventional Ku-band, or the 24.75-25.25 GHz band also apply to earth stations that use allocated FSS frequencies to provide feeder links for non-FSS space stations, e.g., feeder links for Mobile-Satellite Service (MSS) or BSS space stations.

The Order also changes filing requirements. For example, we remove the requirement on applicants for earth station operation in the 18.3-18.8 GHz, 19.7-20.2 GHz, 28.35-28.6 GHz, and 29.25-30.0 GHz bands to submit antenna gain plots for the receive bands. We also delete requirements for portable earth station transceivers to demonstrate compliance with certain rule sections.

#### Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered

The RFA requires an agency to describe any significant, specifically small business, alternatives that it has considered in reaching its proposed approach, which may

include the following four alternatives (among others): “(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rules for such small entities; (3) the use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities.”

The Commission is aware that some of the revisions may impact small entities. The NPRM sought comment from all interested parties, and small entities were encouraged to bring to the Commission’s attention any specific concerns they may have with the proposals outlined in the NPRM. No commenters raised any specific concerns about the impact of the revisions on small entities. This order adopts rule revisions to modernize the rules and advance the satellite industry. The revisions eliminate unnecessary requirements and expand routine processing to applications in additional frequency bands, among other changes. Together, the revisions in this Order lessen the burden of compliance on small entities with more limited resources than larger entities.

The adopted changes for earth station licensing clarify requirements for routine licensing and expand applicability of routine licensing standards. Each of these changes will lessen the burden in the licensing process. Specifically, this Order adopts revisions to provide alternatives for filing requirements, reduce filing requirements and clarify antenna pattern measurement requirements in such a way that applicant burden will be reduced. Thus, the revisions will ultimately lead to benefits for small earth station operators in the long-term.

Incorporation by Reference

This final rule incorporates by reference five elements of the ITU Radio Regulations, Edition of 2012, into part 25 for specific purposes:

(1) ITU Radio Regulations, Article 9, “Procedure for effecting coordination with or obtaining agreement of other administrations,” Section II, “Procedure for effecting coordination.”

(2) ITU Radio Regulations, Appendix 30, “Provisions for all services and associated Plans and List for the broadcasting-satellite service in the frequency bands 11.7-12.2 GHz (in Region 3), 11.7-12.5 GHz (in Region 1) and 12.2-12.7 GHz (in Region 2).”

(3) ITU Radio Regulations, Appendix 30A, “Provisions and associated Plans and List for feeder links for the broadcasting-satellite service (11.7-12.5 GHz in Region 1, 12.2-12.7 GHz in Region 2 and 11.7-12.2 GHz in Region 3) in the frequency bands 14.5-14.8 GHz and 17.3-18.1 GHz in Regions 1 and 3, and 17.3-17.8 GHz in Region 2.”

(4) ITU Radio Regulations, Appendix 30B, “Provisions and associated Plan for the fixed-satellite service in the frequency bands 4 500-4 800 MHz, 6 725-7 025 MHz, 10.70-10.95 GHz, 11.2-11.45 GHz and 12.75-13.25 GHz.”

(5) ITU-R Recommendation S.1503-2, “Functional description to be used in developing software tools for determining conformity of non-geostationary-satellite orbit fixed-satellite system networks with limits contained in Article 22 of the Radio Regulations,” December 2013.

Materials (1) through (4) above are available for free download at <http://www.itu.int/pub/R-REG-RR-2012>. ITU-R Recommendation S.1503-2 is available for free download at <http://www.itu.int/rec/R-REC-S.1503-2-201312-I>. In addition, copies of all of the materials are available for purchase from the ITU through the contact



information provided in new section 25.108, and are available for public inspection at the Commission address noted in the rule as well.

Article 9, Section II concerns the procedures for international coordination of frequency assignments for most space stations licensed by the Commission. Articles 30, 30A, and 30B govern international use of the BSS, associated feeder-link, and FSS planned bands, respectively. ITU-R Recommendation S.1503-2 describes means to evaluate equivalent power-flux density of certain NGSO FSS systems. The relation of these materials to specific requirements in part 25 is noted above in the discussions of the specific requirements. Applicants and licensees affected by rule sections including these materials by reference should become familiar with the incorporated materials.

#### Ordering Clauses

IT IS ORDERED, pursuant to 47 U.S.C. 154(i), 157(a), 160, 161, 303(c), 303(f), 303(g), 303(r), 308(b), that this Report and Order is adopted, the policies, rules, and requirements discussed herein are adopted, and part 25 of the Commission's rules is amended as set forth below.

IT IS FURTHER ORDERED that the International Bureau is delegated authority to issue Public Notices consistent with this Report and Order.

IT IS FURTHER ORDERED that the International Bureau will issue a Public Notice announcing the effective date for all of the changes adopted in this Report and Order.

IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, will send a copy of this

Order, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

#### List of Subjects

##### 47 CFR Part 0

Administrative practice and procedure.

##### 47 CFR Part 25

Administrative practice and procedure, earth stations, incorporation by reference, satellites.

Federal Communications Commission.

Marlene H. Dortch,

Secretary.

For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR parts 0 and 25 as follows:

#### PART 0 – COMMISSION ORGANIZATION

1. The authority citation for part 0 continues to read as follows:

Authority: Sec. 5, 48 Stat. 1068, as amended; 47 U.S.C. 155, 225, unless otherwise noted.

2. In § 0.457, add paragraph (d)(1)(vii)(C) to read as follows:

**§ 0.457 Records not routinely available for public inspection.**

\* \* \* \* \*

(d) \* \* \*

(1) \* \* \*

(vii) \* \* \*

(C) APIs submitted pursuant to §25.111(e) of this chapter and Coordination Requests filed pursuant to §25.110(b)(3)(i) of this chapter are not routinely available for public inspection before the Commission submits the Coordination Request to the ITU.

Submission of Coordination Requests to the ITU will be announced by public notice pursuant to §25.151(a)(9) of this chapter.

\* \* \* \* \*

**PART 25 – SATELLITE COMMUNICATIONS**

3. The authority citation for part 25 is revised to read as follows:

Authority: Interprets or applies 47 U.S.C. 154, 301, 302, 303, 307, 309, 310, 319, 332, 605, and 721, unless otherwise noted.

4. In § 25.103, add definitions of “Conventional C-band,” “Conventional Ka-band,” “Conventional Ku-band,” “Extended C-band,” “Plane perpendicular to the GSO arc,” “Plane tangent to the GSO arc,” “Skew angle,” and “Two-degree-compliant space

station” in alphabetical order; remove the definitions of “12/14 GHz bands,” “20/30 GHz bands,” and “C band”; and revise the definitions of “Extended Ku band,” “NGSO FSS gateway earth station,” “Protection areas,” and “Routine processing or licensing” to read as follows:

**§25.103 Definitions.**

\* \* \* \* \*

Conventional C-band. The 3700-4200 MHz (space-to-Earth) and 5925-6425 MHz (Earth-to-space) FSS frequency bands.

Conventional Ka-band. The 18.3-18.8 GHz (space-to-Earth), 19.7-20.2 GHz (space-to-Earth), 28.35-28.6 GHz (Earth-to-space), and 29.25-30.0 GHz (Earth-to-space) frequency bands, which the Commission has designated as primary for GSO FSS operation.

Conventional Ku-band. The 11.7-12.2 GHz (space-to-Earth) and 14.0-14.5 GHz (Earth-to-space) FSS frequency bands.

\* \* \* \* \*

Extended C-band. The 3600-3700 MHz (space-to-Earth), 5850-5925 MHz (Earth-to-space), and 6425-6725 MHz (Earth-to-space) FSS frequency bands.

Extended Ku-band. The 10.95-11.2 GHz (space-to-Earth), 11.45-11.7 GHz (space-to-Earth), and 13.75-14.0 GHz bands (Earth-to-space) FSS frequency bands.

\* \* \* \* \*

NGSO FSS gateway earth station. An earth station or complex of multiple earth station antennas that supports the routing and switching functions of an NGSO FSS system and that does not originate or terminate communication traffic. An NGSO FSS gateway earth

station may also be used for telemetry, tracking, and command transmissions and is not for the exclusive use of any customer.

\* \* \* \* \*

Plane perpendicular to the GSO arc. The plane that is perpendicular to the “plane tangent to the GSO arc,” as defined below, and includes a line between the earth station in question and the GSO space station that it is communicating with.

Plane tangent to the GSO arc. The plane defined by the location of an earth station’s transmitting antenna and a line in the equatorial plane that is tangent to the GSO arc at the location of the GSO space station that the earth station is communicating with.

\* \* \* \* \*

Protection areas. The geographic regions where U.S. Department of Defense meteorological satellite systems or National Oceanic and Atmospheric Administration meteorological satellite systems, or both such systems, receive signals from low earth orbiting satellites. Also, areas around NGSO MSS feeder-link earth stations in the 1.6/2.4 GHz Mobile-Satellite Service determined in the manner specified in §25.203(j).

\* \* \* \* \*

Routine processing or licensing. Expedited processing of unopposed applications for earth stations in the FSS communicating with GSO space stations that satisfy the criteria in §§25.138(a), 25.211(d), 25.212(c), 25.212(d), 25.212(e), 25.212(f), 25.218, or 25.223(b), include all required information, are consistent with all Commission rules, and do not raise any policy issues. Some, but not all, routine earth station applications are eligible for an autogrant procedure under §25.115(a)(3).

\* \* \* \* \*

Skew angle. The angle between the minor axis of an axially asymmetric antenna beam and the plane tangent to the GSO arc.

\* \* \* \* \*

Two-degree-compliant space station. A GSO FSS space station operating in the conventional or extended C-bands, the conventional or extended Ku-bands, or the conventional Ka-band within the limits on downlink EIRP density or PFD specified in §25.140(a)(3) and communicating only with earth stations operating in conformance with routine uplink parameters specified in §§25.138(a), 25.211(d), 25.212(c), (d), or (f), 25.218, 25.221(a)(1) or (a)(3), 25.222(a)(1) or (a)(3), 25.226(a)(1) or (a)(3), or 25.227(a)(1) or (a)(3).

\* \* \* \* \*

5. Add § 25.108 to read as follows:

**§25.108 Incorporation by reference.**

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Commission must publish a document in the Federal Register and the material must be available to the public. All approved material is available for inspection at the Federal Communications Commission, 445 12th Street SW, Reference Information Center, Room CY-A257, Washington, DC 20554, 202-418-0270, and is available from the sources listed below. It is also available for inspection at the National Archives and Records Administration (NARA). For

information on the availability of this material at NARA, call 202-741-6030 or go to [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).

(b) International Telecommunication Union (ITU), Place des Nations, 1211 Geneva 20 Switzerland; [www.itu.int](http://www.itu.int); Voice: +41 22 730 5111; Fax: +41 22 733 7256; email: [itumail@itu.int](mailto:itumail@itu.int).

(1) ITU Radio Regulations, Volume 1: Articles, Article 9, “Procedure for effecting coordination with or obtaining agreement of other administrations,” Section II, “Procedure for effecting coordination,” Edition of 2012, <http://www.itu.int/pub/R-REG-RR-2012>. Incorporation by reference approved for §25.111(e).

(2) ITU Radio Regulations, Volume 2: Appendices, Appendix 30, “Provisions for all services and associated Plans and List for the broadcasting-satellite service in the frequency bands 11.7-12.2 GHz (in Region 3), 11.7-12.5 GHz (in Region 1) and 12.2-12.7 GHz (in Region 2),” Edition of 2012, <http://www.itu.int/pub/R-REG-RR-2012>. Incorporation by reference approved for §§25.117(h) and 25.118(e).

(3) ITU Radio Regulations, Volume 2: Appendices, Appendix 30A, “Provisions and associated Plans and List for feeder links for the broadcasting-satellite service (11.7-12.5 GHz in Region 1, 12.2-12.7 GHz in Region 2 and 11.7-12.2 GHz in Region 3) in the frequency bands 14.5-14.8 GHz and 17.3-18.1 GHz in Regions 1 and 3, and 17.3-17.8 GHz in Region 2,” Edition of 2012, <http://www.itu.int/pub/R-REG-RR-2012>. Incorporation by reference approved for §§25.110(b), 25.117(h), and 25.118(e).

(4) ITU Radio Regulations, Volume 2: Appendices, Appendix 30B, “Provisions and associated Plan for the fixed-satellite service in the frequency bands 4 500-4 800 MHz, 6 725-7 025 MHz, 10.70-10.95 GHz, 11.2-11.45 GHz and 12.75-13.25 GHz,” Edition of

2012, <http://www.itu.int/pub/R-REG-RR-2012>. Incorporation by reference approved for §§25.110(b) and 25.140(a).

(5) Recommendation ITU-R S.1503-2, “Functional description to be used in developing software tools for determining conformity of non-geostationary-satellite orbit fixed-satellite system networks with limits contained in Article 22 of the Radio Regulations,” December 2013, <http://www.itu.int/rec/R-REC-S.1503-2-201312-I>. Incorporation by reference approved for §25.146(a).

5. In § 25.110, revise paragraphs (b) and (f) to read as follows:

**§ 25.110 Filing of applications, fees, and number of copies.**

\* \* \* \* \*

(b) Submitting your application. (1) All earth station license applications must be filed electronically on FCC Form 312 in accordance with the applicable provisions of part 1, subpart Y of this chapter.

(2) Except as provided in paragraph (b)(3) of this section, applications for space station licenses must be filed electronically on FCC Form 312 in accordance with the applicable provisions of part 1, subpart Y of this chapter and include all information required by §25.114.

(3) A license application for 17/24 GHz BSS space station operation or for GSO FSS space station operation not subject to the provisions in Appendix 30A of the ITU Radio Regulations (incorporated by reference, see §25.108) may be submitted in two steps, as follows:



(i) An application for 17/24 GHz BSS space station operation or for GSO FSS space station operation not subject to the provisions in Appendix 30B of the ITU Radio Regulations (incorporated by reference, see §25.108) may be initiated by filing with the Commission, in accordance with the applicable provisions of part 1, subpart Y of this chapter, a draft Coordination Request and simplified Form 312 for the proposed operation and a declaration of acceptance of ITU cost-recovery responsibility in accordance with §25.111(d). The simplified Form 312, Main Form submission must include the information required by items 1-17, 43, 45, and 46.

(ii) An application for GSO FSS space station operation subject to the provisions in Appendix 30B of the ITU Radio Regulations (incorporated by reference, see §25.108) may be initiated by submitting to the Commission, in accordance with the applicable provisions of part 1, subpart Y of this chapter, a draft ITU filing to convert an allotment into an assignment, to introduce an additional system, or to modify an assignment in the Appendix 30B List accompanied by a simplified Form 312 and a declaration of acceptance of ITU cost-recovery responsibility in accordance with §25.111(d). The simplified Form 312, Main Form submission must include the information required by items 1-17, 43, 45, and 46. In addition, the applicant must submit the results of an analysis demonstrating that no U.S. filing under Appendix 30B would be deemed affected by the proposed operation under the relevant ITU criteria or, for any affected filings, a letter signed by the affected operator that it consents to the new filing.

(iii) An application initiated pursuant to paragraphs (b)(3)(i) or (b)(3)(ii) of this section will be considered completed by the filing of an FCC Form 312 and the remaining

information required in a complete license application, including the information required by §25.114, within two years of the date of submission of the initial application materials.

\* \* \* \* \*

(f) An applicant must pay the appropriate filing fee in accordance with part 1, subpart G of this chapter, at the time when it files a FCC Form 312.

6. In § 25.111, revise the section heading and paragraph (d) and add paragraph (e) to read as follows:

**§25.111 Additional information, ITU filings, and ITU cost recovery.**

\* \* \* \* \*

(d) The Commission will submit filings to the ITU on behalf of an applicant, licensee, or other requesting party only after the party has filed a signed declaration of unconditional acceptance of all consequent ITU cost-recovery responsibility. Applicants and licensees must file the declaration electronically in the “Other Filings” tab of the application file in the IBFS database, and must also mail a paper copy to the International Bureau, Satellite Division. In addition, applicants and licensees must reference the call sign and name of the satellite network in the declaration. All cost-recovery declarations must include the name(s), address(es), email address(es), and telephone number(s) of a contact person, or persons, responsible for cost recovery inquiries and ITU correspondence and filings. Supplements must be filed as necessary to apprise the Commission of changes in the contact information until the ITU cost-recovery responsibility is discharged. The applicant, licensee, or other party must remit payment of any resultant cost-recovery fee to the ITU by the due date specified in the ITU invoice, unless an appeal is pending with

the ITU that was filed prior to the due date. A license granted in reliance on such a commitment will be conditioned upon discharge of any such cost-recovery obligation.

Where an applicant or licensee has an overdue ITU cost-recovery fee and does not have an appeal pending with the ITU, the Commission will dismiss any application associated with that satellite network.

(e) The Commission will process and forward to the ITU up to five Advance Publication filings by an entity that are not accompanied by a complete space station license application or by an application pursuant to §25.110(b)(3)(i) or (b)(3)(ii). Such Advance Publication filing requests not contained in an application must be accompanied by a letter request and a signed ITU cost-recovery declaration pursuant to paragraph (d) of this section. A request for filing of Advance Publication information will be attributed to an entity in the same manner as a space station license application under the criteria set forth in §25.159(c).

Note to Paragraph (e): After June 30, 2016, the Commission will not forward Advance Publication information for satellite networks or systems subject to Article 9, Section II of the ITU Radio Regulations (incorporated by reference, see §25.108).

7. In § 25.112, revise the section heading, the first sentence in paragraph (b) introductory text, and paragraph (c) and add paragraph (d) to read as follows:

**§ 25.112 Dismissal and return of applications.**

\* \* \* \* \*

(b) Applications for space station authority found defective under paragraph (a)(3) or (a)(4) of this section will not be considered. \* \* \*

\*\*\*\*\*

(c) The Commission will dismiss an application for failure to prosecute or for failure to respond substantially within a specified time period to official correspondence or requests for additional information. Dismissal will be without prejudice unless the application is mutually exclusive pursuant to §25.155, in which case it will be dismissed with prejudice.

(d) An application will be dismissed without prejudice as a matter of right if the applicant requests its dismissal prior to final Commission action.

8. In § 25.113, revise the section heading and paragraphs (f), (g), and (h) and add paragraph (i) to read as follows:

**§ 25.113 Station construction, deployment approval, and operation of spare satellites.**

\* \* \* \* \*

(f) Construction permits are not required for U.S.-licensed space stations, except for stations that the applicant proposes to operate to disseminate program content to be received by the public at large, rather than only by subscribers. Construction of a station for which a construction permit is not required may commence, at the applicant's own risk, prior to grant of a license.

(g) Except as set forth in paragraphs (h) and (i) of this section, approval for orbital deployment and a station license (i.e., operating authority) must be applied for and granted before a space station may be deployed and operated in orbit. Approval for orbital deployment may be requested in an application for a space station license.

However, an application for authority to deploy and operate an on-ground spare satellite will be considered pursuant to the following procedures:

(1) Applications for deployment and operation of an on-ground spare NGSO-like satellite will be considered pursuant to the procedures set forth in §25.157, except as provided in paragraph (g)(3) of this section.

(2) Applications for deployment and operation of an on-ground spare GSO-like satellite will be considered pursuant to the procedures set forth in §25.158, except as provided in paragraph (g)(3) of this section.

(3) Neither paragraph (g)(1) nor (g)(2) of this section will apply in cases where the space station to be deployed is determined to be an emergency replacement for a previously authorized space station that has been lost as a result of a launch failure or a catastrophic in-orbit failure.

(h) An operator of NGSO space stations under a blanket license granted by the Commission need not apply for license modification to operate technically identical in-orbit spare satellites in an authorized orbit. However, the licensee must notify the Commission within 30 days of bringing an in-orbit spare into service and certify that its activation has not exceeded the number of space stations authorized to provide service and that the licensee has determined by measurement that the activated spare is operating within the terms of the license.

(i) An operator of NGSO space stations under a blanket license granted by the Commission need not apply for license modification to deploy and operate technically identical replacement satellites in an authorized orbit within the term of the system authorization. However, the licensee must notify the Commission of the intended launch

at least 30 days in advance and certify that its operation of the additional space station(s) will not increase the number of space stations providing service above the maximum number specified in the license.

9. In § 25.114, revise paragraphs (a), (b), (c)(4)(vi)(D), (c)(13), (d)(10), and (d)(15)(i), (iii), and (iv) to read as follows:

**§ 25.114 Applications for space station authorizations.**

(a)(1) A license application filed pursuant to §25.110(b)(2) for a GSO space station or NGSO space station or space-station constellation must comprise a comprehensive proposal and must be submitted on FCC Form 312, Main Form and Schedule S, with attached exhibits required by paragraph (d) of this section.

(2) An application for blanket authority for an NGSO constellation of space stations that are not all technically identical must provide the information required by paragraphs (c) and (d) of this section for each type of station in the constellation.

(3) For an application filed pursuant to the two-step procedure in §25.110(b)(3), the filing pursuant to §25.110(b)(3)(iii) must be submitted on FCC Form 312, Main Form and Schedule S, with attached exhibits as required by paragraph (d) of this section, and must constitute a comprehensive proposal.

(b) Each application for a new or modified space station authorization must contain the formal waiver required by 47 U.S.C. 304.

(c) \* \* \*

(4) \* \* \*

(vi) \* \* \*

(D) For a space station with steerable beams that are not shapeable, specify the applicable contours, as defined in paragraph(c)(4)(vi)(A) or (c)(4)(vi)(B) of this section, with a description of a proposed coverage area for each steerable beam or provide the contour information described in paragraph (c)(4)(vi)(C) of this section for each steerable beam.

\* \* \* \* \*

(13) And the polarization information necessary to determine compliance with §25.210(i).

\* \* \* \* \*

(d) \* \* \*

(10) An application for space station authorization in the 1.6/2.4 GHz or 2 GHz Mobile-Satellite Service must include information required by §25.143(b);

\* \* \* \* \*

(15) \* \* \*

(i) If the applicant proposes to operate in the 17.3-17.7 GHz frequency band, a demonstration that the proposed space station will comply with the power flux density limits in §25.208(w) unless the applicant provides a certification under paragraph (d)(15)(ii) of this section.

\* \* \* \* \*

(iii) If the applicant proposes to provide international service in the 17.7-17.8 GHz frequency band, a certification that the proposed space station will comply with the power flux density limits in §25.208(c).

(iv) Any information required by §§25.264(a)(6), 25.264(b)(4), or 25.264(d).

\* \* \* \* \*

§ 25.115 [Amended]

10. Amend § 25.115 as follows:

- a. Revise the section heading;
- b. Revise paragraph (a)(2) introductory text and paragraphs (a)(2)(iii) through (vii);
- c. Remove paragraphs (a)(2)(viii) and (ix);
- d. Revise paragraph (c)(1), paragraph (c)(2) introductory text, and paragraph (c)(2)(i) introductory text;
- e. Add paragraph (c)(3);
- f. Remove the word “CSAT” and “(CSATs)” each place they appear in paragraph (c);
- g. Revise paragraph (e);
- h. Revise the second sentence in paragraph (f);
- i. Revise paragraph (g) introductory text, and paragraphs (g)(1) and (2);
- j. Remove and reserve paragraph (h); and
- k. Revise paragraphs (i) and (k).

**§ 25.115 Applications for earth station authorizations.**

(a) \* \* \*

(2) Applicants for licenses for transmitting earth stations in the FSS may file on FCC Form 312EZ if all of the following criteria are met:

\* \* \* \* \*

(iii) The application meets all relevant criteria in §§25.211 or 25.212 or includes information filed pursuant to paragraph (g)(1) of this section indicating that off-axis EIRP



density from the proposed earth stations will not exceed relevant levels specified in §§25.138(a) or 25.218;

(iv) Operation of the proposed station has been successfully coordinated with terrestrial systems, if the station would transmit in the 5925-6425 MHz band;

(v) The application includes an environmental impact statement pursuant to §1.1311 of this chapter, if required;

(vi) The applicant does not propose to communicate via non-U.S.-licensed space stations not on the Permitted Space Station List; and

(vii) If the proposed station(s) will receive in the 18.3-18.8 GHz and/or 19.7-20.2 GHz bands, the applicant proposes to communicate only via satellites for which coordination has been completed pursuant to Footnote US334 of the U.S. Table of Frequency Allocations with respect to Federal Government systems authorized on a primary basis, under an agreement previously approved by the Commission and the National Telecommunications and Information Administration, and the applicant certifies that it will operate consistently with the agreement.

\* \* \* \* \*

(c)(1) Networks of earth stations operating in the 11.7-12.2 GHz and 14.0-14.5 GHz bands with U.S.-licensed or non-U.S.-licensed space stations for domestic or international services. Applications to license networks of earth stations operating in any portion of the 11.7-12.2 GHz and 14.0-14.5 GHz bands under blanket operating authority may be filed on FCC Form 312 or Form 312EZ, with a Schedule B for each large (5 meters or larger) hub station antenna and each representative type of small antenna (less than 5 meters) operating within the network.

(i) Applications to license networks of earth stations operating in the 11.7-12.2 GHz and 14.0-14.5 GHz bands under blanket operating authority that meet the requirements of §§25.212(c) or 25.218(e) or (f) will be routinely processed.

(ii) Applications to license networks of earth stations operating in the 11.7-12.2 GHz and 14.0-14.5 GHz bands under blanket operating authority that do not meet the requirements of §§25.212(c) or 25.218(e) or (f) must comply with the requirements in §25.220 and must be filed on FCC Form 312 with a Schedule B for each large (5 meters or larger) hub station antenna and each representative type of small antenna (less than 5 meters) operating within the network.

(c)(2) Networks of earth stations operating in the 3700-4200 MHz and 5925-6425 MHz bands. Applications to license networks of earth stations operating in the 3700-4200 MHz and 5925-6425 MHz bands must be filed electronically on FCC Form 312, Main Form and Schedule B. Applications will be routinely processed provided that frequency coordination has been satisfactorily completed and that the proposed earth stations comply with the applicable provisions in §§25.211(d) or 25.212(d). Alternatively, applicants that have satisfactorily completed frequency coordination may be routinely processed if the proposed earth stations comply with the applicable off-axis EIRP density limits in §25.218(c) or (d).

(i) For earth station antennas operating with power levels not consistent with the applicable provisions in §§25.211(d) or 25.212(d), or with EIRP density levels not consistent with those specified in §25.218(c) or (d), the applicant must file an initial lead application providing a detailed overview of the complete network. Such lead applications must fully identify the scope and nature of the service to be provided, as well

as the complete technical details of each representative type of antenna that will operate within the network. Such lead applications for a single system must identify:

\* \* \* \* \*

(c)(3) Networks of earth stations operating in the 18.3-18.8 GHz, 19.7-20.2 GHz, 28.35-28.6 GHz, and 29.25-30 GHz bands with U.S.-licensed or non-U.S.-licensed satellites for domestic or international services.

(i) Applications to license networks of earth stations that will transmit digitally modulated signals to GSO space stations in the 28.35-28.6 GHz and/or 29.25-30.0 GHz bands under blanket operating authority must be filed on FCC Form 312, or Form 312EZ if available, with a Schedule B for each large (5 meters or larger) hub station antenna and each representative type of small antenna (less than 5 meters) operating within the network and may be routinely processed if the criteria in paragraphs (c)(3)(i)(A) and (B) of this section are met:

(A) The applicant certifies pursuant to §25.132(a)(1) that the off-axis gain of transmitting antennas in the network will not exceed the relevant levels specified in §25.209(a) and (b) and the power spectral density of any digitally modulated carrier into any transmitting earth station antenna in the proposed network will not exceed 3.5 dBW/MHz as specified in §25.212(e).

(B) The application includes information filed pursuant to paragraph (g)(1) of this section indicating that off-axis EIRP density from the proposed earth stations will not exceed relevant routine levels specified in §25.138(a).

(ii) Applications to license networks of earth stations operating in the 28.35-28.6 GHz and/or 29.25-30.0 GHz bands under blanket operating authority that do not meet the

requirements of §§25.212(e) or 25.138(a) must comply with the requirements in §25.220 and must be filed on FCC Form 312 with a Schedule B for each large (5 meters or larger) hub station antenna and each representative type of small antenna (less than 5 meters) operating within the network.

\* \* \* \* \*

(e) License applications for earth station operation in any portion of the 18.3-20.2 GHz and 28.35-30.0 GHz bands not filed on FCC Form 312EZ pursuant to paragraph (a)(2) of this section must be filed on FCC Form 312, Main Form and Schedule B, and must include any information required by paragraph (g) or (j) of this section or by §25.130. An applicant may request authority for operation of GSO FSS earth stations in the conventional Ka-band, or for operation of NGSO FSS earth stations in the 18.8-19.3 GHz (space-to-Earth) and 28.6-29.1 (Earth-to-space) bands, without specifying the location of user terminals but must specify the geographic area(s) in which they will operate and the location of hub and/or gateway stations.

(f) \* \* \* Applications for blanket authority to operate transceiver units may be filed using FCC Form 312, Main Form and Schedule B. \* \* \*

(g) Applications for earth stations that will transmit to GSO space stations in any portion of the 5850-6725 MHz, 13.75-14.5 GHz, 24.75-25.25 GHz, 28.35-28.6 GHz, or 29.25-30.0 GHz bands must include, in addition to the particulars of operation identified on FCC Form 312 and associated Schedule B, the information specified in either paragraph (g)(1) or (g)(2) of this section for each earth station antenna type.

(1) Specification of off-axis EIRP density calculated from measurements made consistent with the requirements in §25.132(b)(1), in accordance with the following requirements.

For purposes of this rule, the “off-axis angle” is the angle in degrees from a line between an earth station antenna and the target satellite.

- (i) A plot of maximum co-polarized EIRP density in the plane tangent to the GSO arc at off-axis angles from minus 180° to plus 180°;
- (ii) A plot of maximum co-polarized EIRP density in the plane tangent to the GSO arc at off-axis angles from minus 10° to plus 10°;
- (iii) A plot of maximum co-polarized EIRP density in the plane perpendicular to the GSO arc at off-axis angles from 0° to plus 30°;
- (iv) A plot of maximum cross-polarized EIRP density in the plane tangent to the GSO arc at off-axis angles from minus 7° to plus 7°;
- (v) A plot of maximum cross-polarized EIRP density in the plane perpendicular to the GSO arc at off-axis angles from minus 7° to plus 7°;
- (vi) For antennas for which gain measurements are made pursuant to §25.132(b)(1)(iv), the EIRP density plots specified in paragraphs (g)(1)(i) through (v) of this section must be provided over the specified angular ranges in two orthogonal planes, one of which is tangent to the GSO arc and with the antenna operating at its maximum skew angle, which the applicant must specify.
- (vii) The relevant off-axis EIRP density envelopes in §§25.138, 25.218, 25.221, 25.222, 25.223, 25.226, or 25.227 must be superimposed on plots submitted pursuant to paragraphs (g)(1)(i) through (vi) of this section.
- (viii) The showing must include a supplemental table for each off-axis angular range in which the relevant EIRP density envelope will be exceeded, specifying angular coordinates in degrees off-axis and corresponding calculated off-axis EIRP density at

0.2° increments over the angular range in which the routine envelope will be exceeded and one degree on each side of that range.

(2) An applicant that certifies pursuant to §25.132(a)(1) that a proposed antenna's measured gain pattern conforms to relevant standards in §25.209(a) and (b) and that input power density to the antenna will not exceed the relevant limit in §§25.211 or 25.212 need not provide a showing pursuant to paragraph (g)(1) of this section for operation with that antenna.

(h) [Reserved]

(i) An earth station applicant filing an application for a blanket-licensed earth station network made up of FSS earth stations and planning to use a contention protocol must include in its application a certification that its contention protocol usage will be reasonable.

\* \* \* \* \*

(k)(1) Applicants for FSS earth stations that qualify for routine processing in the conventional or extended C-bands, the conventional or extended Ku-bands, the conventional Ka-band, or the 24.75-25.25 GHz band, including ESV applications filed pursuant to §25.222(a)(1) or (a)(3), VMES applications filed pursuant to §25.226(a)(1) or (a)(3), and ESAA applications filed pursuant to §25.227(a)(1) or (a)(3), may designate the Permitted Space Station List as a point of communication. Once such an application is granted, the earth station operator may communicate with any space station on the Permitted Space Station List, provided that the operation is consistent with the technical parameters and conditions in the earth station license and any limitations placed on the space station authorization or noted in the Permitted Space Station List.

(2) Notwithstanding paragraph (k)(1) of this section, the operator of an earth station that qualifies for routine processing in the conventional Ka-band may not communicate with a space station on the Permitted Space Station List in the 18.3-18.8 GHz or 19.7-20.2 GHz band until the space station operator has completed coordination under Footnote US334 to §2.106 of this chapter.

11. In § 25.117, add paragraph (h) to read as follows:

**§ 25.117 Modification of station license.**

\* \* \* \* \*

(h) Unless otherwise ordered by the Commission, an application for any of the following kinds of modification of the operation of a GSO space station will be deemed granted 35 days after the date of the public notice that the application has been accepted for filing, provided no objection is filed during the 30-day notice period and the application does not propose a change that would be inconsistent with a Commission rule or require modification of the BSS plan in Appendix 30 or the associated feeder-link Plan in Appendix 30A of the ITU Radio Regulations (both incorporated by reference, see §25.108).

(1) Relocation of a DBS or GSO FSS space station by no more than 0.15° from the initially authorized orbital location, provided the application includes a signed certification that:

(i) The space station operator has assessed and limited the probability of the satellite becoming a source of debris as a result of collisions with large debris or other operational satellites at the new orbital location; and

(ii) The proposed station-keeping volume of the satellite following relocation will not overlap a station-keeping volume reasonably expected to be occupied by any other satellite, including those authorized by the Commission, applied for and pending before the Commission, or otherwise the subject of an ITU filing and either in orbit or progressing towards launch.

(2) Repositioning one or more antenna beams by no more than 0.3 angular degrees from a line between the space station and the initially authorized boresight location(s).

12. In § 25.118, revise paragraphs (a), (b), and (e) to read as follows:

**§ 25.118 Modifications not requiring prior authorization.**

(a) Earth station modifications, notification required. Earth station licensees may make the following modifications without prior Commission authorization, provided they notify the Commission, using FCC Form 312 and Schedule B, within 30 days of the modification. The notification must be filed electronically through the International Bureau Filing System (IBFS) in accordance with the applicable provisions of part 1, subpart Y of this chapter.

(1) Blanket-licensed earth station operators may add remote terminals operating on a primary basis without prior authorization, provided they have complied with all applicable frequency coordination procedures in accordance with §25.251.

(2) A licensee providing service on a private carrier basis may change its operations to common carrier status without obtaining prior Commission authorization. The licensee must notify the Commission using FCC Form 312 within 30 days after the completed change to common carrier status.



- (3) An earth station operator may change a point of communication without prior authorization, provided the operator does not repoint the earth station's antenna beyond any coordinated range; and
- (i) The change results from a space station relocation described in paragraph (e) of this section, or
  - (ii) The new point of communication is a replacement GSO space station within  $\pm 0.15^\circ$  of orbital longitude of the same location, with authority to serve the U.S., and the change does not entail any increase in the earth station's EIRP or EIRP density.
- (4) Licensees may make other changes to their authorized earth stations without prior authority from the Commission, provided the modification does not involve:
- (i) An increase in EIRP or EIRP density (either main lobe or off-axis);
  - (ii) Additional operating frequencies;
  - (iii) A change in polarization;
  - (iv) An increase in antenna height;
  - (v) Antenna repointing beyond any coordinated range or
  - (vi) A change from the originally authorized coordinates of more than 1 second in latitude or longitude for stations operating in frequency bands shared with terrestrial systems or more than 10 seconds of latitude or longitude for stations operating in frequency bands not shared with terrestrial systems.
- (b) Earth station modifications, notification not required. Notwithstanding paragraph (a) of this section, equipment in an authorized earth station may be replaced without prior authorization and without notifying the Commission if the new equipment is electrically identical to the existing equipment.

\* \* \* \* \*

(e) Relocation of GSO space stations. A space station licensee may relocate a GSO space station without prior authorization, but upon 30 days prior notice to the Commission and any potentially affected licensed spectrum user, provided that the operator meets the following requirements. The notification must be filed electronically on FCC Form 312 through the International Bureau Filing System (IBFS) in accordance with the applicable provisions of part 1, subpart Y of this chapter:

- (1) The space station will be relocated to a position within  $\pm 0.15^\circ$  of an orbital location assigned to the same licensee.
- (2) The licensee certifies that the space station will operate after the relocation within the technical parameters authorized and coordinated for the space station previously assigned to that location.
- (3) The licensee certifies that it will comply with all the conditions of its license for operation at the changed location.
- (4) The licensee certifies that it will limit operations of the space station to tracking, telemetry, and command functions during the relocation and satellite drift transition period.
- (5) The licensee certifies that:
  - (i) It has assessed and limited the probability of the satellite becoming a source of debris as a result of collisions with large debris or other operational satellites at the new orbital location; and
  - (ii) The proposed station-keeping volume of the satellite following relocation will not overlap a station-keeping volume reasonably expected to be occupied by any other

satellite, including those authorized by the Commission, applied for and pending before the Commission, or otherwise the subject of an ITU filing and either in orbit or progressing towards launch.

(6) The licensee certifies that the relocation will not result in a lapse of service for any current customer.

(7) If the space station to be relocated is a DBS space station, the licensee certifies that there will be no increase in interference due to the operations of the relocated space station that would require the Commission to submit a proposed modification to the ITU Appendix 30 Broadcasting-Satellite Service Plan and/or the Appendix 30A feeder-link Plan (both incorporated by reference, see §25.108) to the ITU Radiocommunication Bureau. A DBS licensee that meets this certification requirement is not subject to the requirements in paragraph (e)(2) of this section.

(8) If the space station to be relocated is a DBS space station, the licensee certifies that it will meet the geographic service requirements in §25.148(c) after the relocation.

\* \* \* \* \*

13. In § 25.119, revise paragraph (a) and add paragraphs (h), (i), and (j) to read as follows:

**§ 25.119 Assignment or transfer of control of station authorization.**

(a) You must file an application for Commission authorization before you can transfer, assign, dispose of (voluntarily or involuntarily, directly or indirectly, or by transfer of control of any corporation or any other entity) your construction permit or station license, or accompanying rights, except as provided in paragraph (h) of this section. The

Commission will grant your application only if it finds that doing so will serve the public interest, convenience, and necessity.

\* \* \* \* \*

(h) Pro forma transactions involving a telecommunications carrier. You do not need prior Commission approval for a non-substantial (pro forma) transfer of control or assignment of license involving a telecommunications carrier, as defined in 47 U.S.C. 153(51).

However, the pro forma transferee or assignee must file a notification with the Commission no later than 30 days after the transfer or assignment is completed. The notification must be filed on FCC Form 312, Main Form and Schedule A and must contain a certification that the transfer of control or assignment was pro forma and that, together with all previous pro forma transactions, it did not result in a change in the actual controlling party.

(i) Pro forma transactions not involving a telecommunications carrier. A complete application for Commission approval of a non-substantial (pro forma) transfer of control or assignment of license not involving a telecommunications carrier, as defined in 47 U.S.C. 153(51), will be deemed granted one business day after filing, provided that:

(1) Approval does not require a waiver of, or a declaratory ruling pertaining to, any applicable Commission rule; and

(2) The application includes a certification that the proposed transfer of control or assignment is pro forma and that, together with all previous pro forma transactions, it would not result in a change in the actual controlling party.

(j) Receive-only earth station registrations. You do not need prior Commission approval for a transfer of control or assignment of a receive-only earth station registration. For all

such transactions other than non-substantial (pro forma) transfers of control, the transferee or assignee must file a notification with the Commission on FCC Form 312, Main Form and Schedule A no later than 30 days after the transfer or assignment is completed. No notification is required for a pro forma transfer of control of a receive-only earth station registrant.

14. In § 25.129, revise paragraph (c) to read as follows:

**§ 25.129 Equipment authorization for portable earth-station transceivers.**

\* \* \* \* \*

(c) In addition to the information required by §§1.1307(b) and 2.1033(c) of this chapter, applicants for certification required by this section must submit any additional equipment test data necessary to demonstrate compliance with pertinent standards for transmitter performance prescribed in §§25.138, 25.202(f), and 25.216, must submit the statements required by §2.1093(c) of this chapter, and must demonstrate compliance with the labeling requirement in §25.285(b).

\* \* \* \* \*

15. In § 25.130, revise paragraph (b), (g) introductory text, and the note to paragraph (g) to read as follows:

**§ 25.130 Filing requirements for transmitting earth stations.**

\* \* \* \* \*

(b) A frequency coordination analysis in accordance with §25.203(b) must be provided for earth stations transmitting in the frequency bands shared with equal rights between

terrestrial and space services, except applications for user transceiver units associated with the NVNG MSS, which must instead provide the information required by §25.135, and applications for 1.6/2.4 GHz MSS user transceivers, which must demonstrate that the transceivers will operate in compliance with relevant requirements in §25.213. Also, applications for transmitting earth stations must include any notification or demonstration required by any other relevant provision in §25.203.

\* \* \* \* \*

(g) Parties may apply, either in an initial application or an application for modification of license, for operating authority for multiple transmitting FSS earth stations that are not eligible for blanket or network licensing under another section of this part in the following circumstances:

\* \* \* \* \*

Note to paragraph (g): This paragraph does not apply to applications for blanket-licensed earth station networks filed pursuant to §§25.115(c) or 25.218; applications for conventional Ka-band hub stations filed pursuant to §25.115(e); applications for NGSO FSS gateway earth stations filed pursuant to §25.115(f); applications filed pursuant to §§25.221, 25.222, 25.226, or 25.227; or applications for 29 GHz NGSO MSS feeder-link stations in a complex as defined in §25.257.

16. In § 25.131, revise paragraphs (b) and (j)(2) to read as follows:

**§ 25.131 Filing requirements and registration for receive-only earth stations.**

\* \* \* \* \*

(b) Receive-only earth stations in the FSS that operate with U.S.-licensed space stations, or with non-U.S.-licensed space stations that have been duly approved for U.S. market access, may be registered with the Commission in order to protect them from interference from terrestrial microwave stations in bands shared co-equally with the Fixed Service in accordance with the procedures of §§25.203 and 25.251, subject to the stricture in §25.209(c).

\* \* \* \* \*

(j) \* \* \*

(2) Operators of receive-only earth stations need not apply for a license to receive transmissions from non-U.S.-licensed space stations that have been duly approved for U.S. market access, provided the space station operator and earth station operator comply with all applicable rules in this chapter and with applicable conditions in the Permitted Space Station List or market-access grant.

17. In § 25.132, revise the section heading and paragraphs (a) and (b) to read as follows:

**§ 25.132 Verification of earth station antenna performance.**

(a)(1) Except as provided in paragraph (a)(2) of this section, applications for transmitting earth stations in the FSS, including feeder-link stations, must include a certification that the applicant has reviewed the results of a series of radiation pattern tests performed by the antenna manufacturer on representative equipment in representative configurations, and the test results demonstrate that the equipment meets relevant off-axis gain standards in §25.209, measured in accordance with paragraph (b)(1) of this section. Applicants and

licensees must be prepared to submit the radiation pattern measurements to the Commission on request.

(2) Applicants that specify off-axis EIRP density pursuant to §25.115(g)(1) are exempt from the certification requirement in paragraph (a)(1) of this section.

(b)(1) For purposes of paragraph (a)(1) of this section and §25.115(g)(1), the following measurements on a production antenna performed on calibrated antenna range must be made at the top and bottom of each frequency band assigned for uplink transmission:

(i)(A) Co-polarized gain in the azimuth plane must be measured across a range extending to  $180^\circ$  on each side of the main-lobe axis, and the measurements must be represented in two plots: one across the entire angular range of  $\pm 180^\circ$  from the main-lobe axis and the other across  $\pm 10^\circ$  from the main-lobe axis.

(B) Co-polarized gain must be measured from  $0^\circ$  to  $30^\circ$  from beam peak in the elevation plane.

(ii) Cross-polarization gain must be measured across a range of plus and minus  $7^\circ$  from beam peak in the azimuth and elevation planes.

(iii) Main beam gain.

(iv) For antennas with asymmetric apertures or beams, where the minor axis of the antenna beam (major axis of the antenna aperture) will not always be aligned parallel to the plane tangent to the GSO arc, the measurements in paragraphs (b)(1)(i) through (iii) of this section must be made over the angular ranges specified in paragraphs (b)(1)(i)(A) and (B) of this section in two orthogonal planes, with the antenna oriented at the maximum skew angle at which it will operate.



(2) The relevant envelope specified in §25.209 must be superimposed on each measured pattern.

\* \* \* \* \*

18. In § 25.133, revise paragraphs (a)(2), (b)(1)(v) and (vi), and (b)(2) to read as follows and remove and reserve paragraph (c):

**§ 25.133 Period of construction; certification of commencement of operation.**

(a) \* \* \*

(2) Operation of a network of earth stations at unspecified locations under an initial blanket license must commence within 12 months from the date of the license grant unless the Commission orders otherwise.

(b)(1) \* \* \*

(v) A certification that the facility as authorized has been completed and that each antenna has been tested and found to perform within authorized gain patterns or off-axis EIRP density levels; and

(vi) The date when the earth station became operational.

\*\*\*\*\*

(2) For FSS earth stations authorized under a blanket license, the licensee must notify the Commission when the earth station network commences operation. The notification should include the information described in paragraphs (b)(1)(i) through (iv) of this section and a certification that each hub antenna, and a type of antenna used in remote stations in the network, has been tested and found to perform within authorized gain patterns or off-axis EIRP density levels. For any type of antenna whose performance was

not certified when the network commenced operation, the licensee must submit the information and certification stated above for the antenna type when it is first deployed.

(c) [Reserved]

\* \* \* \* \*

§ 25.134 [Removed and Reserved]

**19. Remove and reserve § 25.134.**

20. In § 25.137, revise the section heading, paragraph (a) introductory text, paragraph (d) introductory text, and paragraphs (d)(4), (d)(5), (e), and (f) to read as follows:

**§ 25.137 Requests for U.S. market access through non-U.S.-licensed space stations.**

(a) Earth station applicants requesting authority to communicate with a non-U.S.-licensed space station and entities filing a petition for declaratory ruling to access the United States market using a non-U.S.-licensed space station must attach an exhibit with their FCC Form 312 demonstrating that U.S.-licensed satellite systems have effective competitive opportunities to provide analogous services in:

\* \* \* \* \*

(d) Earth station applicants requesting authority to communicate with a non-U.S.-licensed space station and entities filing a petition for declaratory ruling to access the United States market must demonstrate that the non-U.S.-licensed space station has complied with all applicable Commission requirements for non-U.S.-licensed systems to operate in the United States, including but not limited to the following:

\* \* \* \* \*

(4) The surety bond requirement in §25.165, for non-U.S.-licensed space stations that are not in orbit and operating.

(5) Recipients of U.S. market access for NGSO-like satellite operation that have one market access request on file with the Commission in a particular frequency band, or one granted market access request for an unbuilt NGSO-like system in a particular frequency band, will not be permitted to request access to the U.S. market through another NGSO-like system in that frequency band.

(e) An entity requesting access to the United States market through a non-U.S.-licensed space station pursuant to a petition for declaratory ruling may amend its request by submitting an additional petition for declaratory ruling. Such additional petitions will be treated on the same basis as amendments filed by U.S. space station applicants for purposes of determining the order in which the petitions will be considered relative to pending applications and petitions.

(f) A non-U.S.-licensed space station operator that has been granted access to the United States market pursuant to a declaratory ruling may modify its U.S. operations under the procedures set forth in §§25.117(d) and (h) and 25.118(e).

\* \* \* \* \*

21. In § 25.138, revise the section heading, paragraph (a) introductory text, and paragraphs (a)(1) through (a)(4); add paragraph (a)(5) and revise paragraph (b); remove and reserve paragraphs (c), (d), and (e); and remove paragraph (g) to read as follows.

**§ 25.138 Licensing requirements for GSO FSS earth stations in the conventional Ka-band.**

(a) Applications for earth station licenses in the GSO FSS in the conventional Ka-band that indicate that the following requirements will be met and include the information required by relevant provisions in §§25.115 and 25.130 may be routinely processed:

(1) The EIRP density of co-polarized signals in the plane tangent to the GSO arc, as defined in §25.103, will not exceed the following values under clear sky conditions:

$32.5 - 25\log(\theta)$	dBW/MHz	for	$2.0^\circ \leq \theta \leq 7^\circ$
11.5	dBW/MHz	for	$7^\circ \leq \theta \leq 9.2^\circ$
$35.5 - 25\log(\theta)$	dBW/MHz	for	$9.2^\circ \leq \theta \leq 19.1^\circ$
3.5	dBW/MHz	for	$19.1^\circ < \theta \leq 180^\circ$

Where:

$\theta$  is the angle in degrees from a line from the earth station antenna to the assigned orbital location of the target satellite.

(2) In the plane perpendicular to the GSO arc, as defined in §25.103, the EIRP density of co-polarized signals will not exceed the following values under clear sky conditions:

$35.5 - 25\log(\theta)$	dBW/MHz	for	$3.5^\circ \leq \theta \leq 7^\circ$
14.4	dBW/MHz	for	$7^\circ < \theta \leq 9.2^\circ$
$38.5 - 25\log(\theta)$	dBW/MHz	for	$9.2^\circ < \theta \leq 19.1^\circ$
6.5	dBW/MHz	for	$19.1^\circ < \theta \leq 180^\circ$

Where  $\theta$  is as defined in paragraph (a)(1) of this section.

(3) The EIRP density levels specified in paragraphs (a)(1) and (2) of this section may be exceeded by up to 3 dB, for values of  $\theta > 7^\circ$ , over 10% of the range of theta ( $\theta$ ) angles from 7-180° on each side of the line from the earth station to the target satellite.

(4) The EIRP density of cross-polarized signals will not exceed the following values in the plane tangent to the GSO arc or in the plane perpendicular to the GSO arc under clear sky conditions:

22.5 - 25log( $\theta$ )	dBW/MHz	for	$2.0^\circ < \theta \leq 7.0^\circ$
--------------------------	---------	-----	-------------------------------------

Where  $\theta$  is as defined in paragraph (a)(1) of this section.

(5) A license application for earth station operation in a network using variable power density control of earth stations transmitting simultaneously in shared frequencies to the same target satellite receiving beam may be routinely processed if the applicant certifies that the aggregate off-axis EIRP density from all co-frequency earth stations transmitting simultaneously to the same target satellite receiving beam, not resulting from colliding data bursts transmitted pursuant to a contention protocol, will not exceed the off-axis EIRP density limits permissible for a single earth station, as specified in paragraphs (a)(1) through (a)(4) of this section.

\* \* \* \* \*

(b) Operation with off-axis EIRP density exceeding a relevant envelope specified in paragraph (a) of this section and applications proposing such operation are subject to coordination requirements in §25.220.

(c)-(e) [Reserved]

\* \* \* \* \*

22. In § 25.140, revise the section heading and paragraphs (a) and (b)(3), and add paragraph (d) to read as follows:

**§ 25.140 Further requirements for license applications for GSO space station operation in the FSS and the 17/24 GHz BSS.**

(a)(1) In addition to the information required by §25.114, an applicant for GSO FSS space station operation involving transmission of analog video signals must certify that the proposed analog video operation has been coordinated with operators of authorized co-frequency space stations within six degrees of the requested orbital location.

(2) In addition to the information required by §25.114, an applicant for GSO FSS space station operation at an orbital location less than two degrees from the assigned location of an authorized co-frequency GSO space station must either certify that the proposed operation has been coordinated with the operator of the co-frequency space station or submit an interference analysis demonstrating the compatibility of the proposed system with the co-frequency space station. Such an analysis must include, for each type of radio frequency carrier, the link noise budget, modulation parameters, and overall link performance analysis. (See Appendices B and C to Licensing of Space Stations in the Domestic Fixed-Satellite Service, FCC 83-184, and the following public notices, copies of which are available in the Commission's EDOCS database: DA 03-3863 and DA 04-1708.) The provisions in this paragraph do not apply to proposed analog video operation, which is subject to the requirement in paragraph (a)(1) of this section.

(3) In addition to the information required by §25.114, an applicant for a GSO FSS space station must provide the following for operation other than analog video operation:

(i) With respect to proposed operation in the conventional or extended C-bands, a certification that downlink EIRP density will not exceed 3 dBW/4kHz for digital transmissions or 8 dBW/4kHz for analog transmissions and that associated uplink operation will not exceed applicable EIRP density envelopes in §§25.218 or 25.221(a)(1) unless the non-routine uplink and/or downlink operation is coordinated with operators of authorized co-frequency space stations at assigned locations within six degrees of the orbital location of the proposed space station and except as provided in paragraph (d) of this section.

(ii) With respect to proposed operation in the conventional or extended Ku-bands, a certification that downlink EIRP density will not exceed 14 dBW/4kHz for digital transmissions or 17 dBW/4kHz for analog transmissions and that associated uplink operation will not exceed applicable EIRP density envelopes in §§25.218, 25.222(a)(1), 25.226(a)(1), or 25.227(a)(1) unless the non-routine uplink and/or downlink operation is coordinated with operators of authorized co-frequency space stations at assigned locations within six degrees of the orbital location of the proposed space station and except as provided in paragraph (d) of this section.

(iii) With respect to proposed operation in the conventional Ka-band, a certification that the proposed space station will not generate power flux-density at the Earth's surface in excess of -118 dBW/m<sup>2</sup>/MHz and that associated uplink operation will not exceed applicable EIRP density envelopes in §25.138(a) unless the non-routine uplink and/or downlink operation is coordinated with operators of authorized co-frequency space

stations at assigned locations within six degrees of the orbital location and except as provided in paragraph (d) of this section.

(iv) With respect to proposed operation in the 4500-4800 MHz (space-to-Earth), 6725-7025 MHz (Earth-to-space), 10.70-10.95 GHz (space-to-Earth), 11.20-11.45 GHz (space-to-Earth), and/or 12.75-13.25 GHz (Earth-to-space) bands, a statement that the proposed operation will take into account the applicable requirements of Appendix 30B of the ITU Radio Regulations (incorporated by reference, see §25.108) and a demonstration that it is compatible with other U.S. ITU filings under Appendix 30B.

(v) With respect to proposed operation in other FSS bands, an interference analysis demonstrating compatibility with any previously authorized co-frequency space station at a location two degrees away or a certification that the proposed operation has been coordinated with the operator(s) of the previously authorized space station(s). If there is no previously authorized space station at a location two degrees away, the applicant must submit an interference analysis demonstrating compatibility with a hypothetical co-frequency space station two degrees away with the same receiving and transmitting characteristics as the proposed space station.

(b) \* \* \*

(3) Except as described in paragraph (b)(5) of this section, an applicant for a license to operate a 17/24 GHz BSS space station that will be located precisely at one of the 17/24 GHz BSS orbital locations specified in Appendix F of the Report and Order adopted May 2, 2007, IB Docket No. 06-123, FCC 07-76, must certify that the downlink power flux density on the Earth's surface will not exceed the values specified in §25.208(w), and that the associated feeder-link earth station transmissions will not exceed the EIRP density



limits in §25.223(c) unless the non-conforming uplink operation is coordinated with other affected 17/24 GHz BSS systems in accordance with §25.223(c).

\* \* \* \* \*

(d) An operator of a GSO FSS space station in the conventional or extended C-bands, conventional or extended Ku-bands, or conventional Ka-band may notify the Commission of its non-routine transmission levels and be relieved of the obligation to coordinate such levels with later applicants and petitioners.

(1) The letter notification must include the downlink off-axis EIRP density levels or power flux density levels and/or uplink off-axis EIRP density levels, specified per frequency range and space station antenna beam, that exceed the relevant routine limits set forth in paragraphs (a)(3)(i) through (iii) of this section and §§25.138(a), 25.218, 25.221(a)(1), 25.222(a)(1), 25.226(a)(1), or 25.227(a)(1).

(2) The notification will be placed on public notice pursuant to §25.151(a)(11).

(3) Non-routine transmissions notified pursuant to this paragraph (d) need not be coordinated with operators of authorized co-frequency space stations that filed their complete applications or petitions after the date of filing of the notification with the Commission. Such later applicants and petitioners must accept any additional interference caused by the notified non-routine transmissions.

(4) An operator of a replacement space station, as defined in §25.165(e), may operate with non-routine transmission levels to the extent permitted under paragraph (d)(3) of this section for the replaced space station.

\* \* \* \* \*

**§ 25.142 [Amended]**

23. In § 25.142, remove paragraph (a)(5).

24. In § 25.143, revise paragraph (a) and the introductory text of paragraph (b)(2), remove paragraphs (b)(3), (c), (e), and (g), redesignate paragraph (f) as paragraph (c), and redesignate paragraph (h) as paragraph (d).

**§ 25.143 Licensing provisions for the 1.6/2.4 GHz Mobile-Satellite Service and 2 GHz Mobile-Satellite Service.**

(a) Authority to launch and operate a constellation of NGSO satellites will be granted in a single blanket license for operation of a specified number of space stations in specified orbital planes. An individual license will be issued for each GSO satellite, whether it is to be operated in a GSO-only system or in a GSO/NGSO hybrid system.

(b) \* \* \*

(2) Technical qualifications. In addition to providing the information specified in paragraph (b)(1) of this section, each applicant and petitioner must demonstrate the following:

\* \* \* \* \*

25. In § 25.145, revise the section heading and paragraph (e) to read as follows and remove paragraphs (f), (g), and (h).

**§ 25.145 Licensing provisions for the FSS in the 18.3-20.2 GHz and 28.35-30.0 GHz bands.**

\* \* \* \* \*

(e) Prohibition of certain agreements. No license shall be granted to any applicant for a space station in the FSS operating in portions of the 18.3-20.2 GHz and 28.35-30.0 GHz bands if that applicant, or any persons or companies controlling or controlled by the applicant, shall acquire or enjoy any right, for the purpose of handling traffic to or from the United States, its territories or possessions, to construct or operate space segment or earth stations, or to interchange traffic, which is denied to any other United States company by reason of any concession, contract, understanding, or working arrangement to which the Licensee or any persons or companies controlling or controlled by the Licensee are parties.

\*\*\*\*\*

26. In § 25.146, revise the section heading, the second sentence in paragraph (a)(1)(i), the heading of paragraph (a)(2), and remove paragraph (m).

**§ 25.146 Licensing and operating rules for the NGSO FSS in the 10.7-14.5 GHz bands.**

(a) \* \* \*

(1)(i) \* \* \* The PFD masks shall be generated in accordance with the specification stipulated in the most recent version of ITU-R S.1503-2 (incorporated by reference, see §25.108). \* \* \*

\* \* \* \* \*

(2) Single-entry additional operational equivalent power flux-density, in the Earth-to-space direction, (additional operational EPFD<sub>up</sub>) limits. \* \* \*

\* \* \* \* \*

**§ 25.147 [Removed and Reserved]**

27. Remove and reserve § 25.147.

28. In § 25.151, revise the section heading and paragraphs (a)(1), (a)(7), and (a)(8) and add paragraphs (a)(9) through (a)(11) to read as follows:

**§ 25.151 Public notice.**

(a) \* \* \*

(1) The receipt of applications for new station authorizations, except applications for space station licenses filed pursuant to §25.110(b)(3)(i) or (ii) of this part;

\* \* \* \* \*

(7) Information that the Commission in its discretion believes to be of public significance;

(8) Special environmental considerations as required by part 1 of this chapter;

(9) Submission of Coordination Requests and Appendix 30B filings to the ITU in response to requests filed pursuant to §25.110(b)(3)(i) and (b)(3)(ii);

(10) The receipt of space station application information filed pursuant to §25.110(b)(3)(iii); and

(11) The receipt of notifications of non-routine transmission filed pursuant to §25.140(d).

\* \* \* \* \*

**§ 25.152 [Removed and Reserved]**

29. Remove and reserve § 25.152.

30. In § 25.155, remove the word “electrical” in paragraph (a) and revise paragraphs (b) and (c) to read as follows:

**§ 25.155 Mutually exclusive applications.**

\* \* \* \* \*

(b) A license application for NGSO-like satellite operation, as defined in §25.157(a), will be entitled to comparative consideration with one or more mutually exclusive applications only if the application is received by the Commission in a condition acceptable for filing by the “cut-off” date specified in a public notice.

(c) A license application for GSO-like satellite operation, as defined in §25.158(a)(1), will be entitled to comparative consideration with another application only if:

(1) The application is mutually exclusive with another application for GSO-like operation; and

(2) The application is received by the Commission in a condition acceptable for filing at the same millisecond as the other application.

31. In § 25.156, remove and reserve paragraph (b) and revise paragraphs (d)(1) through (d)(5) to read as follows:

**§ 25.156 Consideration of applications.**

\* \* \* \* \*

(b) [Reserved]

\* \* \* \* \*

- (d)(1) Applications for NGSO-like satellite operation will be considered pursuant to the procedures set forth in §25.157, except as provided in §25.157(b).
- (2) Applications for GSO-like satellite operation will be considered pursuant to the procedures set forth in §25.158, except as provided in §25.158(a)(2).
- (3) Applications for both NGSO-like satellite operation and GSO-like satellite operation in two or more service bands will be treated as separate applications for each service band, and each service band request will be considered pursuant to §§25.157 or 25.158, as appropriate.
- (4) Applications for feeder-link authority or inter-satellite link authority will be treated like an application separate from its associated service band. Each feeder-link request or inter-satellite link request will be considered pursuant to the procedure for applications for GSO-like operation or NGSO-like operation, as applicable.
- (5) In cases where the Commission has not adopted frequency-band specific service rules, the Commission will not consider applications for NGSO-like satellite operation after it has granted an application for GSO-like operation in the same frequency band, and it will not consider applications for GSO-like operation after it has granted an application for NGSO-like operation in the same band, unless and until the Commission establishes NGSO/GSO sharing criteria for that frequency band. In the event that the Commission receives applications for NGSO-like operation and applications for GSO-like operation at the same time, and the Commission has not adopted sharing criteria in that band, the Commission will divide the spectrum between GSO-like and NGSO-like licensees based on the proportion of qualified GSO-like and NGSO-like applicants.

\* \* \* \* \*

32. In § 25.157, revise the section heading, paragraphs (a), (b), (c) introductory text, (g)(1), and the last sentence in paragraph (g)(2) to read as follows:

**§ 25.157 Consideration of applications for NGSO-like satellite operation.**

(a) This section specifies the procedures for considering license applications for “NGSO-like” satellite operation, except as provided in paragraph (b) of this section. For purposes of this section, the term “NGSO-like satellite operation” means:

- (1) Operation of any NGSO satellite system, and
- (2) Operation of a GSO MSS satellite to communicate with earth stations with non-directional antennas.

(b) The procedures prescribed in this section do not apply to an application for authority to launch and operate a replacement space station, or stations, that meet the relevant criteria in §25.165(e)(1) and (e)(2) and that will be launched before the space station(s) to be replaced are, or is, retired from service or within a reasonable time after loss of a space station during launch or due to premature failure in orbit.

(c) Each application for NGSO-like satellite operation that is acceptable for filing under §25.112, except replacement applications described in paragraph (b) of this section, will be reviewed to determine whether it is a “competing application,” i.e., filed in response to a public notice initiating a processing round, or a “lead application,” i.e., all other applications for NGSO-like satellite operation.

\* \* \* \* \*

(g)(1) In the event that a license granted in a processing round pursuant to this section is cancelled for any reason, the Commission will redistribute the bandwidth allocated to that

applicant equally among the remaining applicants whose licenses were granted concurrently with the cancelled license, unless the Commission determines that such a redistribution would not result in a sufficient number of licensees remaining to make reasonably efficient use of the frequency band.

(2) \* \* \* Parties already holding licenses for NGSO-like satellite operation in that frequency band will not be permitted to participate in that processing round.

\* \* \* \* \*

33. In § 25.158, revise the section heading, paragraphs (a), (b) introductory text, (b)(2), (c), and (d) introductory text to read as follows:

**§ 25.158 Consideration of applications for GSO-like satellite operation.**

(a)(1) This section specifies the procedures for considering license applications for “GSO-like” satellite operation, except as provided in paragraph (a)(2) of this section. For purposes of this section, the term “GSO-like satellite operation” means operation of a GSO satellite to communicate with earth stations with directional antennas, including operation of GSO satellites to provide MSS feeder links.

(2) The procedures prescribed in this section do not apply to an application for authority to launch and operate a replacement space station that meets the relevant criteria in §25.165(e)(1) and (e)(2) and that will be launched before the space station to be replaced is retired from service or within a reasonable time after loss of a space station during launch or due to premature failure in orbit.

(b) Except as provided in paragraph (a)(2) of this section, license applications for GSO-like satellite operation, including first-step filings pursuant to §25.110(b)(3)(i) or (ii), will



be placed in a queue and considered in the order that they are filed, pursuant to the following procedure: \* \* \* \* \*

(2) If the application is acceptable for filing under §25.112, the application will be placed on public notice pursuant to §25.151.

(i) For applications filed pursuant to §25.110(b)(3)(i) or (b)(3)(ii), the public notice will announce that the Coordination Request or Appendix 30B filing has been submitted to the ITU. When further information is filed pursuant to §25.110(b)(3)(iii), it will be reviewed to determine whether it is substantially complete within the meaning of §25.112. If so, a second public notice will be issued pursuant to §25.151 to give interested parties an opportunity to file pleadings pursuant to §25.154.

(ii) For any other license application for GSO-like satellite operation, the public notice will announce that the application has been found acceptable for filing and will give interested parties an opportunity to file pleadings pursuant to §25.154.

\* \* \* \* \*

(c) A license applicant for GSO-like satellite operation must not transfer, assign, or otherwise permit any other entity to assume its place in any queue.

(d) In the event that two or more applications for GSO-like satellite operation are mutually exclusive within the meaning of §25.155(c), the Commission will consider those applications pursuant to the following procedure:

\* \* \* \* \*

**§ 25.159 [Amended]**

34. In § 25.159, remove and reserve paragraph (a).

35. In § 25.163, revise paragraph (a)(3) to read as follows:

**§ 25.163 Reinstatement.**

(a) \* \* \*

(3) The petition sets forth with specificity the procedures that have been established to ensure timely filings in the future.

\* \* \* \* \*

36. In § 25.164, revise paragraphs (a) and (b), remove and reserve paragraphs (c) through (e), and revise paragraphs (f) and (g) to read as follows:

**§ 25.164 Milestones.**

(a) The recipient of an initial license for a GSO space station, other than a DBS or SDARS space station, granted on or after August 27, 2003, must launch the space station, position it in its assigned orbital location, and operate it in accordance with the station authorization no later than five years after the grant of the license, unless a different schedule is established by Title 47, Chapter I, or the Commission.

(b) The recipient of an initial license for an NGSO satellite system, other than a DBS or SDARS satellite system, granted on or after September 11, 2003, must launch the space stations, place them in the assigned orbits, and operate them in accordance with the station authorization no later than six years after the grant of the license, unless a different schedule is established by Title 47, Chapter I, or the Commission.

(c)- (e) [Reserved]

(f) A licensee subject to the requirements in paragraph (a) or (b) of this section must either demonstrate compliance with the applicable requirement or notify the Commission in writing that the requirement was not met, within 15 days after the specified deadline. Compliance with a milestone requirement in paragraph (a) or (b) of this section may be demonstrated by certifying pursuant to §25.121(d) that the space station(s) in question, has, or have, been launched and placed in the authorized orbital location or non-geostationary orbit(s) and that in-orbit operation of the space station or stations has been tested and found to be consistent with the terms of the authorization.

(g) Licensees of satellite systems that include both NGSO satellites and GSO satellites, other than DBS and SDARS satellite systems, must meet the requirement in paragraph (a) of this section with respect to the GSO satellite(s) and the requirement in paragraph (b) of this section with respect to the NGSO satellites.

\* \* \* \* \*

37. In §25.165, revise the section heading, the first sentence in paragraph (a) introductory text, and paragraphs (a)(1) through (a)(3), (c), and (e), remove and reserve paragraph (d), and add paragraphs (f) and (g) to read as follows:

**§ 25.165 Surety bonds.**

(a) For all space station licenses issued after September 20, 2004, other than licenses for DBS space stations, SDARS space stations, and replacement space stations as defined in paragraph (e) of this section, the licensee must post a bond within 30 days of the grant of its license. \* \* \*

(1) An NGSO licensee must have on file a surety bond requiring payment in the event of default as defined in paragraph (c) of this section, in an amount, at a minimum, determined according to the following formula, with the resulting dollar amount rounded to the nearest \$10,000:  $A = \$1,000,000 + \$4,000,000 * D / 2192$ , where A is the amount to be paid and D is the lesser of 2192 or the number of days that elapsed from the date of license grant until the date when the license was surrendered.

(2) A GSO licensee must have on file a surety bond requiring payment in the event of default as defined in paragraph (c) of this section, in an amount, at a minimum, determined according to the following formula, with the resulting dollar amount rounded to the nearest \$10,000:  $A = \$1,000,000 + \$2,000,000 * D / 1827$ , where A is the amount to be paid and D is the lesser of 1827 or the number of days that elapsed from the date of license grant until the date when the license was surrendered.

(3) Licensees of satellite systems including both NGSO space stations and GSO space stations that will operate in the same frequency bands must file a surety bond requiring payment in the event of default as defined in paragraph (c) of this section, in an amount, at a minimum, to be determined according to the formula in paragraph (a)(1) of this section.

\* \* \* \* \*

(c) A licensee will be considered to be in default with respect to a bond filed pursuant to paragraph (a) of this section if it surrenders the license before meeting all milestone requirements or if it fails to meet any milestone deadline set forth in §25.164, and, at the time of milestone deadline, the licensee has not provided a sufficient basis for extending the milestone.

(d) [Reserved]

(e) A replacement space station is one that:

(1) Is authorized to operate at an orbital location within  $\pm 0.15^\circ$  of the assigned location of a GSO space station to be replaced or is authorized for NGSO operation and will replace an existing NGSO space station in its authorized orbit;

(2) Is authorized to operate in the same frequency bands, and with the same coverage area as the space station to be replaced; and

(3) Is scheduled to be launched so that it will be brought into use at approximately the same time as, but no later than, the existing space station is retired.

(f) An applicant that has submitted a Coordination Request pursuant to §25.110(b)(3)(i) or an Appendix 30B filing pursuant to §25.110(b)(3)(ii) must obtain a surety bond in the amount of \$500,000 in accordance with the requirements in paragraph (b) of this section for licensees. The application will be returned as defective pursuant to §25.112 if a copy of the required bond is not filed with the Commission within 30 days after release of a public notice announcing that the Commission has submitted the Coordination Request or Appendix 30B filing to the ITU.

(g) An applicant will be considered to be in default with respect to a bond filed pursuant to paragraph (f) of this section if the applicant fails to submit a complete, acceptable license application pursuant to §25.110(b)(3)(iii) for the operation proposed in the initial application materials filed pursuant to §25.110(b)(3)(i) or (b)(3)(ii) within two years of the date of submission of the initial application materials.

38. In § 25.202, revise the table and footnotes in paragraph (a)(1) and paragraph (g) to read as follows:

**§ 25.202 Frequencies, frequency tolerance, and emission limits.**

(a)(1) \* \* \*

<b>Space-to-Earth (GHz)</b>	<b>Earth-to-space (GHz)</b>
3.6-3.65	5.091-5.25 <sup>6</sup>
3.65-3.7	5.85-5.925
3.7-4.2	5.925-6.425
4.5-4.8	6.425-6.525
6.7-7.025 <sup>6</sup>	6.525-6.7
7.025-7.075	6.7-7.025
10.7-11.7 <sup>6</sup>	7.025-7.075
11.7-12.2	12.7-12.75
12.2-12.7	12.75-13.25 <sup>6</sup>
18.3-18.58	13.75-14
18.58-18.8	14-14.2
18.8-19.3	14.2-14.5
19.3-19.7	15.43-15.63 <sup>6</sup>
19.7-20.2	17.3-17.8

37.5-40 <sup>1</sup>	24.75-25.05
40-42	25.05-25.25
	27.5-28.35 <sup>7</sup>
	28.35-28.6 <sup>2</sup>
	28.6-29.1 <sup>3</sup>
	29.1-29.25 <sup>4</sup>
	29.25-29.5 <sup>5</sup>
	29.5-30.0 <sup>2</sup>
	47.2-50.2

<sup>1</sup> Use of this band by the FSS is limited to gateway earth station operations, provided the licensee under this Part obtains a license under part 101 of this chapter or an agreement from a part 101 licensee for the area in which an earth station is to be located. Satellite earth station facilities in this band may not be ubiquitously deployed and may not be used to serve individual consumers.

<sup>2</sup> This band is primary for GSO FSS and secondary for NGSO FSS.

<sup>3</sup> This band is primary for NGSO FSS and secondary for GSO FSS.

<sup>4</sup> This band is primary for NGSO MSS feeder links and LMDS hub-to-subscriber transmission.

<sup>5</sup> This band is primary for NGSO MSS feeder links and GSO FSS.

<sup>6</sup> Use of this band by NGSO FSS systems is limited to transmissions to or from gateway earth stations.

<sup>7</sup> FSS is secondary to LMDS in this band.

\* \* \* \* \*

(g)(1) Telemetry, tracking, and command signals may be transmitted in frequencies within the assigned bands that are not at a band edge only if the transmissions cause no greater interference and require no greater protection from harmful interference than the communications traffic on the satellite network or have been coordinated with operators of authorized co-frequency space stations at orbital locations within six degrees of the assigned orbital location.

(2) Frequencies, polarization, and coding of telemetry, tracking, and command transmissions must be selected to minimize interference into other satellite networks.

\* \* \* \* \*

39. In § 25.203, add paragraph (c)(6) and revise the first sentence in paragraph (f), paragraph (g)(1), and paragraph (j) to read as follows:

**§ 25.203 Choice of sites and frequencies.**

\* \* \* \* \*

(c) \* \* \*

(6) Multiple antennas in an NGSO FSS gateway earth station complex located within an area bounded by one second of latitude and one second of longitude may be regarded as a single earth station for purposes of coordination with terrestrial services.

\* \* \* \* \*



(f) \*\*\* In order to minimize possible harmful interference at the National Radio Astronomy Observatory site at Green Bank, Pocahontas County, W. Va., and at the Naval Radio Research Observatory site at Sugar Grove, Pendleton County, W. Va., any applicant for operating authority under this part for a new transmit or transmit-receive earth station, other than a mobile or temporary fixed station, within the area bounded by 39°15' N. on the north, 78°30' W. on the east, 37°30' N. on the south and 80°30' W. on the west or for modification of an existing license for such station to change the station's frequency, power, antenna height or directivity, or location must, when filing the application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, P.O. Box No. 2, Green Bank, W. Va. 24944, in writing, of the technical particulars of the proposed station. \* \* \*

(g) \* \* \*

(1) Applicants for authority to operate a new transmitting earth station in the vicinity of an FCC monitoring station or to modify the operation of a transmitting earth station in a way that would increase the field strength produced at such a monitoring station above that previously authorized should consider the possible need to protect the FCC stations from harmful interference. Geographic coordinates of the facilities that require protection are listed in §0.121(c) of this chapter. Applications for fixed stations that will produce field strength greater than 10 mV/m or power flux density greater than -65.8 dBW/m<sup>2</sup> in the authorized emission bandwidth at any of the referenced coordinates may be examined to determine the extent of possible interference. Depending on the theoretical field strength value and existing root-sum-square or other ambient radio field signal levels at

the referenced coordinates, a condition to protect the monitoring station may be included in the station authorization.

\* \* \* \* \*

(j) Applicants for NGSO 1.6/2.4 GHz Mobile-Satellite Service/Radiodetermination-Satellite Service feeder links in the 17.7-20.2 GHz and 27.5-30.0 GHz bands must coordinate with licensees of FSS and terrestrial-service systems sharing the band to determine geographic protection areas around each NGSO MSS/Radiodetermination-Satellite Service feeder-link earth station.

\* \* \* \* \*

§ 25.204 [Amended]

40. In § 25.204, remove the last sentence in paragraph (e)(1).

41. Revise § 25.205 to read as follows:

**§ 25.205 Minimum antenna elevation angle.**

(a) Earth station antennas must not transmit at elevation angles less than five degrees, measured from the horizontal plane to the direction of maximum radiation, in a frequency band shared with terrestrial radio services or in a frequency band with an allocation to space services operating in both the Earth-to-space and space-to-Earth directions. In other bands, earth station antennas must not transmit at elevation angles less than three degrees. In some instances, it may be necessary to specify greater minimum elevation angles because of interference considerations.

(b) ESAAs in aircraft on the ground must not transmit at elevation angles less than three degrees. There is no minimum angle of antenna elevation for ESAAs while airborne.

42. In § 25.209, revise paragraphs (a), (b), (c), (e), (f) and (h) to read as follows:

**§ 25.209 Earth station antenna performance standards.**

(a) Except as provided in paragraph (f) of this section, the co-polarization gain of any earth station antenna operating in the FSS and transmitting to a GSO satellite, including earth stations providing feeder links for satellite services other than FSS, may not exceed the following limits:

(1) In the plane tangent to the GSO arc, as defined in §25.103, for earth stations not operating in the conventional Ku-band, the 24.75-25.25 GHz band, or the 28.35-30 GHz band:

$29 - 25\log_{10}\theta$	dBi	for	$1.5^\circ \leq \theta \leq 7^\circ$
8	dBi	for	$7^\circ < \theta \leq 9.2^\circ$
$32 - 25\log_{10}\theta$	dBi	for	$9.2^\circ < \theta \leq 48^\circ$
-10	dBi	for	$48^\circ < \theta \leq 180^\circ$

where  $\theta$  is the angle in degrees from a line from the earth station antenna to the assigned orbital location of the target satellite, and dBi refers to dB relative to an isotropic radiator.

This envelope may be exceeded by up to 3 dB in 10% of the range of  $\theta$  angles from  $\pm 7^\circ$  to  $180^\circ$ , and by up to 6 dB in the region of main reflector spillover energy.

(2) In the plane tangent to the GSO arc, for earth stations operating in the conventional Ku-band:

$29 - 25\log_{10}\theta$	dBi	for	$1.5^\circ \leq \theta \leq 7^\circ$
8	dBi	for	$7^\circ < \theta \leq 9.2^\circ$
$32 - 25\log_{10}\theta$	dBi	for	$9.2^\circ < \theta \leq 19.1^\circ$
0	dBi	for	$19.1^\circ < \theta \leq 180^\circ$

where  $\theta$  and dBi are as defined in paragraph (a)(1) of this section. This envelope may be exceeded by up to 3 dB in 10% of the range of  $\theta$  angles from  $\pm 7$ -180°, and by up to 6 dB in the region of main reflector spillover energy.

(3) In the plane tangent to the GSO arc, for earth stations operating in the 24.75-25.25 GHz or 28.35-30 GHz bands:

$29 - 25\log_{10}\theta$	dBi	for	$2^\circ \leq \theta \leq 7^\circ$
8	dBi	for	$7^\circ < \theta \leq 9.2^\circ$
$32 - 25\log_{10}\theta$	dBi	for	$9.2^\circ < \theta \leq 19.1^\circ$
0	dBi	for	$19.1^\circ < \theta \leq 180^\circ$

where  $\theta$  and dBi are as defined in paragraph (a)(1) of this section. This envelope may be exceeded by up to 3 dB in 10% of the range of  $\theta$  angles from  $\pm 7$ -180°, and by up to 6 dB in the region of main reflector spillover energy.

(4) In the plane perpendicular to the GSO arc, as defined in §25.103, for earth stations not operating in the conventional Ku-band, the 24.75-25.25 GHz band, or the 28.35-30 GHz band:

Outside the main beam, the gain of the antenna shall lie below the envelope defined by:

$32 - 25\log_{10}\theta$	dBi	for	$3^\circ < \theta \leq 48^\circ$
-10	dBi	for	$48^\circ < \theta \leq 180^\circ$

where  $\theta$  and dBi are as defined in paragraph (a)(1) of this section. This envelope may be exceeded by up to 6 dB in 10% of the range of  $\theta$  angles from  $\pm 3$ -180°, and by up to 6 dB in the region of main reflector spillover energy.

(5) In the plane perpendicular to the GSO arc, for earth stations operating in the conventional Ku-band:

Outside the main beam, the gain of the antenna shall lie below the envelope defined by:

$32 - 25\log_{10}\theta$	dBi	for	$3^\circ < \theta \leq 19.1^\circ$
0	dBi	for	$19.1^\circ < \theta \leq 180^\circ$

where  $\theta$  and dBi are as defined in paragraph (a)(1) of this section. This envelope may be exceeded by up to 6 dB in 10% of the range of  $\theta$  angles from  $\pm 3$ -180°, and by up to 6 dB in the region of main reflector spillover energy.

(6) In the plane perpendicular to the GSO arc, for earth stations operating in the 24.75-25.25 GHz or 28.35-30 GHz bands:

Outside the main beam, the gain of the antenna shall lie below the envelope defined by:

$32 - 25\log_{10}\theta$	dBi	for	$3.5^\circ < \theta \leq 7^\circ$
10.9	dBi	for	$7^\circ < \theta \leq 9.2^\circ$
$35 - 25\log_{10}\theta$	dBi	for	$9.2^\circ < \theta \leq 19.1^\circ$
3	dBi	for	$19.1^\circ < \theta \leq 180^\circ$

where  $\theta$  and dBi are as defined in paragraph (a)(1) of this section. This envelope may be exceeded by up to 6 dB in 10% of the range of  $\theta$  angles from  $\pm 3$ -180°, and by up to 6 dB in the region of main reflector spillover energy.

(b) Except as provided in paragraph (f) of this section, the off-axis cross-polarization gain of any antenna used for transmission from an FSS earth station to a GSO satellite, including earth stations providing feeder links for satellite services other than FSS, may not exceed the following limits:

(1) In the plane tangent to the GSO arc, for earth stations not operating in the 24.75-25.25 GHz or 28.35-30 GHz bands:

$19 - 25\log_{10}\theta$	dBi	for	$1.8^\circ < \theta \leq 7^\circ$
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where  $\theta$  and dBi are as defined in paragraph (a)(1) of this section.

(2) In the plane perpendicular to the GSO arc, for earth stations not operating in the 24.75-25.25 GHz or 28.35-30 GHz bands:

$19 - 25\log_{10}\theta$	dBi	for	$3^\circ < \theta \leq 7^\circ$
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where  $\theta$  and dBi are as defined in paragraph (a)(1) of this section.

(3) In the plane tangent to the GSO arc or in the plane perpendicular to the GSO arc, for earth stations operating in the 24.75-25.25 GHz or 28.35-30 GHz bands:

$19 - 25\log_{10}\theta$	dBi	for	$2^\circ < \theta \leq 7^\circ$
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where  $\theta$  and dBi are as defined in paragraph (a)(1) of this section.

(c)(1) An earth station licensed for operation with an FSS space station or registered for reception of transmissions from such a space station pursuant to §25.131(b) and (d) is not entitled to protection from interference from authorized operation of other stations that would not cause harmful interference to that earth station if it were using an antenna with

receive-band gain patterns conforming to the levels specified in paragraphs (a) and (b) of this section.

(2) A 17/24 GHz BSS telemetry earth station is not entitled to protection from harmful interference from authorized space station operation that would not cause harmful interference to that earth station if it were using an antenna with receive-band gain patterns conforming to the levels specified in paragraphs (a) and (b) of this section.

Receive-only earth stations in the 17/24 GHz BSS are entitled to protection from harmful interference caused by other space stations to the extent indicated in §25.224.

\* \* \* \* \*

(e) An earth station using asymmetrical antennas without skew angle adjustment capability must comply with the gain values specified in paragraph (a)(1) of this section, in the plane orthogonal to the to the main plane of the antenna, or, alternatively, in the plane corresponding to the maximum skew angle experienced at any location at which the earth station may be located.

(f) A GSO FSS earth station with an antenna that does not conform to the applicable standards in paragraphs (a) and (b) of this section will be authorized only if the applicant demonstrates that the antenna will not cause unacceptable interference. This demonstration must comply with the requirements in §§25.138, 25.218, 25.220, 25.221, 25.222, 25.223, 25.226, or 25.227, as appropriate.

\* \* \* \* \*

(h) The gain of any transmitting antenna in a gateway earth station communicating with NGSO FSS satellites in the 10.7-11.7 GHz, 12.75-13.15 GHz, 13.2125-13.25 GHz, 13.8-14.0 GHz, and/or 14.4-14.5 GHz bands must lie below the envelope defined as follows:

$29 - 25\log_{10}(\theta)$	dBi	for	$1^\circ \leq \theta \leq 36^\circ$
-10	dBi	for	$36^\circ \leq \theta \leq 180^\circ$

where  $\theta$  and dBi are as defined in paragraph (a)(1) of this section. This envelope may be exceeded by up to 3 dB in 10% of the range of  $\theta$  angles from  $\pm 7$ -180°.

43. In § 25.210, remove and reserve paragraph (a) and revise paragraph (i) to read as follows:

**§ 25.210 Technical requirements for space stations.**

(a) [Reserved]

\* \* \* \* \*

(i) Space station antennas in the 17/24 GHz BSS must be designed to provide a cross-polarization isolation such that the ratio of the on axis co-polar gain to the cross-polar gain of the antenna in the assigned frequency band shall be at least 25 dB within its primary coverage area.

\* \* \* \* \*

44. In § 25.211, revise the section heading, remove and reserve paragraph (a) and revise paragraphs (b), (d)(2), (d)(3) and (e) to read as follows:

**§ 25.211 Analog video transmissions in the FSS.**

(a) [Reserved]

(b) All conventional C-band analog video transmissions must contain an energy dispersal signal at all times with a minimum peak-to-peak bandwidth set at whatever value is necessary to meet the power flux density limits specified in §25.208(a) and successfully



coordinated internationally and accepted by adjacent U.S. satellite operators based on the use of state of the art space and earth station facilities. All transmissions in frequency bands described in §25.208(b) and (c) must also contain an energy dispersal signal at all times with a minimum peak-to-peak bandwidth set at whatever value is necessary to meet the power flux density limits specified in §25.208(b) and (c) and successfully coordinated internationally and accepted by adjacent U.S. satellite operators based on the use of state of the art space and earth station facilities.

\* \* \* \* \*

(d) \* \* \*

(2) For transmission in the 5925-6425 MHz band, the input power into the antenna will not exceed 26.5 dBW; or

(3) For transmission in the 14.0-14.5 GHz band, the input power into the antenna will not exceed 27 dBW.

(e) Applications for authority for analog video uplink transmission in the 5925-6425 MHz or 14.0-14.5 GHz bands that are not eligible for routine processing under paragraph (d) of this section are subject to the requirements of §25.220.

45. In § 25.212, revise the section heading, paragraphs (c), (d), and (e) and add paragraphs (g) and (h) to read as follows:

**§ 25.212 Narrowband analog transmissions and digital transmissions in the GSO**

**FSS.**

\* \* \* \* \*

- (c)(1) An earth station that is not subject to licensing under §§25.222, 25.226, or 25.227 may be routinely licensed for analog transmissions in the conventional Ku-band or the extended Ku-band with bandwidths up to 200 kHz (or up to 1 MHz for command carriers at the band edge) if the input power spectral density into the antenna will not exceed -8 dBW/4 kHz, and the application includes certification pursuant to §25.132(a)(1) of conformance with the antenna gain performance requirements in §25.209(a) and (b).
- (2) An earth station that is not subject to licensing under §§25.222, 25.226, or 25.227 may be routinely licensed for digital transmission, including digital video transmission, in the conventional Ku-band or the extended Ku-band if input power spectral density into the antenna will not exceed -14 dBW/4 kHz and the application includes certification pursuant to §25.132(a)(1) of conformance with the antenna gain performance requirements in §25.209(a) and (b).
- (d) An individual earth station that is not subject to licensing under §25.221 may be routinely licensed for digital transmission, or for analog transmission with carrier bandwidths up to 200 kHz (or up to 1 MHz for command carriers at the band edge) in the conventional C-band or the extended C-band, if the applicant certifies conformance with relevant antenna performance standards in §25.209(a) and (b), and power density into the antenna will not exceed +0.5 dBW/4 kHz for analog carriers or -2.7 dBW/4 kHz for digital carriers.
- (e) An earth station may be routinely licensed for digital transmission in the 28.35-28.6 GHz and/or 29.25-30.0 GHz bands if the input power spectral density into the antenna will not exceed 3.5 dBW/MHz and the application includes certification pursuant to

§25.132(a)(1) of conformance with the antenna gain performance requirements in §25.209(a) and (b).

\* \* \* \* \*

(g) A license application for earth station operation in a network using variable power density control of earth stations transmitting simultaneously in shared frequencies to the same target satellite receiving beam may be routinely processed if the applicant certifies that the aggregate off-axis EIRP density from all co-frequency earth stations transmitting simultaneously to the same target satellite receiving beam, not resulting from colliding data bursts transmitted pursuant to a contention protocol, will not exceed the applicable off-axis EIRP density limits permissible for a single earth station, as specified in §§25.218 or 25.138.

(h) Applications for authority for fixed earth station operation in the conventional C-band, the extended C-band, the conventional Ku-band, the extended Ku-band or the conventional Ka-band that do not qualify for routine processing under relevant criteria in this section, §§25.211, 25.218, or 25.138, are subject to the requirements in §25.220.

46. Revise § 25.218 to read as follows:

**§ 25.218 Off-axis EIRP density envelopes for FSS earth stations transmitting in certain frequency bands.**

(a) This section applies to applications for FSS earth stations transmitting to GSO space stations in the conventional C-band, extended C-band, conventional Ku-band, or extended Ku-band, with the following exceptions:

(1) ESV, VMES, and ESAA applications and

(2) Applications proposing transmission of analog command signals at a band edge with bandwidths greater than 1 MHz or transmission of any other type of analog signal with bandwidths greater than 200 kHz.

(b) Earth station applications subject to this section may be routinely processed if they meet the applicable off-axis EIRP density envelopes set forth in this section.

(c) Analog earth station operation in the conventional or extended C-bands.

(1) For co-polarized transmissions in the plane tangent to the GSO arc, as defined in §25.103:

$29.5 - 25\log_{10}\theta$	dBW/4 kHz	for	$1.5^\circ \leq \theta \leq 7^\circ$
8.5	dBW/4 kHz	for	$7^\circ < \theta \leq 9.2^\circ$
$32.5 - 25\log_{10}\theta$	dBW/4 kHz	for	$9.2^\circ < \theta \leq 48^\circ$
-9.5	dBW/4 kHz	for	$48^\circ < \theta \leq 180^\circ$

where  $\theta$  is the angle in degrees from a line from the earth station antenna to the assigned orbital location of the target satellite. The EIRP density levels specified for  $\theta > 7^\circ$  may be exceeded by up to 3 dB in up to 10% of the range of theta ( $\theta$ ) angles from  $\pm 7$ -180°, and by up to 6 dB in the region of main reflector spillover energy.

(2) For co-polarized transmissions in the plane perpendicular to the GSO arc, as defined in §25.103:

$32.5 - 25\log_{10}\theta$	dBW/4 kHz	for	$3^\circ \leq \theta \leq 48^\circ$
-9.5	dBW/4 kHz	for	$48^\circ < \theta \leq 180^\circ$

where  $\theta$  is as defined in paragraph (c)(1) of this section. These EIRP density levels may be exceeded by up to 6 dB in the region of main reflector spillover energy and in up to

10% of the range of  $\theta$  angles not included in that region, on each side of the line from the earth station to the target satellite.

(3) For cross-polarized transmissions in the plane tangent to the GSO arc and in the plane perpendicular to the GSO arc:

$19.5 - 25\log_{10}\theta$	dBW/4 kHz	for	$1.5^\circ \leq \theta \leq 7^\circ$
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where  $\theta$  is as defined in paragraph (c)(1) of this section.

(d) Digital earth station operation in the conventional or extended C-bands.

(1) For co-polarized transmissions in the plane tangent to the GSO arc:

$26.3 - 25\log_{10}\theta$	dBW/4 kHz	for	$1.5^\circ \leq \theta \leq 7^\circ$
5.3	dBW/4 kHz	for	$7^\circ < \theta \leq 9.2^\circ$
$29.3 - 25\log_{10}\theta$	dBW/4 kHz	for	$9.2^\circ < \theta \leq 48^\circ$
-12.7	dBW/4 kHz	for	$48^\circ < \theta \leq 180^\circ$

where  $\theta$  is as defined in paragraph (c)(1) of this section. The EIRP density levels

specified for  $\theta > 7^\circ$  may be exceeded by up to 3 dB in up to 10% of the range of theta ( $\theta$ ) angles from  $\pm 7$ - $180^\circ$ , and by up to 6 dB in the region of main reflector spillover energy.

(2) For co-polarized transmissions in the plane perpendicular to the GSO arc:

$29.3 - 25\log_{10}\theta$	dBW/4 kHz	for	$3^\circ \leq \theta \leq 48^\circ$
-12.7	dBW/4 kHz	for	$48^\circ < \theta \leq 180^\circ$

where  $\theta$  is as defined in paragraph (c)(1) of this section. These EIRP density levels may

be exceeded by up to 6 dB in the region of main reflector spillover energy and in up to

10% of the range of  $\theta$  angles not included in that region, on each side of the line from the earth station to the target satellite.

(3) For cross-polarized transmissions in the plane tangent to the GSO arc and in the plane perpendicular to the GSO arc:

$16.3 - 25\log_{10}\theta$	dBW/4 kHz	for	$1.5^\circ \leq \theta \leq 7^\circ$
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where  $\theta$  is as defined in paragraph (c)(1) of this section.

(4) A license application for earth station operation in a network using variable power density control of earth stations transmitting simultaneously in shared frequencies to the same target satellite receiving beam may be routinely processed if the applicant certifies that the aggregate off-axis EIRP density from all co-frequency earth stations transmitting simultaneously to the same target satellite receiving beam, not resulting from colliding data bursts transmitted pursuant to a contention protocol, will not exceed the off-axis EIRP density limits permissible for a single earth station, as specified in paragraphs (d)(1) through (d)(3) of this section.

(e) Analog earth station operation in the conventional Ku-band.

(1) For co-polarized transmissions in the plane tangent to the GSO arc:

$21 - 25\log_{10}\theta$	dBW/4 kHz	for	$1.5^\circ \leq \theta \leq 7^\circ$
0	dBW/4 kHz	for	$7^\circ < \theta \leq 9.2^\circ$
$24 - 25\log_{10}\theta$	dBW/4 kHz	for	$9.2^\circ < \theta \leq 19.1^\circ$
-8	dBW/4 kHz	for	$19.1^\circ < \theta \leq 180^\circ$

where  $\theta$  is as defined in paragraph (c)(1) of this section. The EIRP density levels specified for  $\theta > 7^\circ$  may be exceeded by up to 3 dB in up to 10% of the range of theta ( $\theta$ ) angles from  $\pm 7$ - $180^\circ$ , and by up to 6 dB in the region of main reflector spillover energy.

(2) For co-polarized transmissions in the plane perpendicular to the GSO arc:

$24 - 25\log_{10}\theta$	dBW/4 kHz	for	$3^\circ \leq \theta \leq 19.1^\circ$
-8	dBW/4 kHz	for	$19.1^\circ < \theta \leq 180^\circ$

where  $\theta$  is as defined in paragraph (c)(1) of this section. These EIRP density levels may be exceeded by up to 6 dB in the region of main reflector spillover energy and in up to 10% of the range of  $\theta$  angles not included in that region, on each side of the line from the earth station to the target satellite.

(3) For cross-polarized transmissions in the plane tangent to the GSO arc and in the plane perpendicular to the GSO arc:

$11 - 25\log_{10}\theta$	dBW/4 kHz	for	$1.5^\circ \leq \theta \leq 7^\circ$
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where  $\theta$  is as defined in paragraph (c)(1) of this section.

(f) Digital earth station operation in the conventional Ku-band.

(1) For co-polarized transmissions in the plane tangent to the GSO arc:

$15 - 25\log_{10}\theta$	dBW/4 kHz	for	$1.5^\circ \leq \theta \leq 7^\circ$
-6	dBW/4 kHz	for	$7^\circ < \theta \leq 9.2^\circ$
$18 - 25\log_{10}\theta$	dBW/4 kHz	for	$9.2^\circ < \theta \leq 19.1^\circ$
-14	dBW/4 kHz	for	$19.1^\circ < \theta \leq 180^\circ$

where  $\theta$  is as defined in paragraph (c)(1) of this section. The EIRP density levels specified for  $\theta > 7^\circ$  may be exceeded by up to 3 dB in up to 10% of the range of theta ( $\theta$ ) angles from  $\pm 7$ -180°, and by up to 6 dB in the region of main reflector spillover energy.

(2) For co-polarized transmissions in the plane perpendicular to the GSO arc:

$18 - 25\log_{10}\theta$	dBW/4 kHz	for	$3^\circ \leq \theta \leq 19.1^\circ$
-14	dBW/4 kHz	for	$19.1^\circ < \theta \leq 180^\circ$

where  $\theta$  is as defined in paragraph (c)(1) of this section. These EIRP density levels may be exceeded by up to 6 dB in the region of main reflector spillover energy and in up to 10% of the range of  $\theta$  angles not included in that region, on each side of the line from the earth station to the target satellite.

(3) For cross-polarized transmissions in the plane tangent to the GSO arc and in the plane perpendicular to the GSO arc:

$5 - 25\log_{10}\theta$	dBW/4 kHz	for	$1.5^\circ \leq \theta \leq 7^\circ$
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where  $\theta$  is as defined in paragraph (c)(1) of this section.

(4) A license application for earth station operation in a network using variable power density control of earth stations transmitting simultaneously in shared frequencies to the same target satellite receiving beam may be routinely processed if the applicant certifies that the aggregate off-axis EIRP density from all co-frequency earth stations transmitting simultaneously to the same target satellite receiving beam, not resulting from colliding data bursts transmitted pursuant to a contention protocol, will not exceed the off-axis EIRP density limits permissible for a single earth station, as specified in paragraphs (f)(1) through -(f)(3) of this section.

(g) Analog earth station operation in the extended Ku-band.



(1) For co-polarized transmissions in the plane tangent to the GSO arc:

$21 - 25\log_{10}\theta$	dBW/4 kHz	for	$1.5^\circ \leq \theta \leq 7^\circ$
0	dBW/4 kHz	for	$7^\circ < \theta \leq 9.2^\circ$
$24 - 25\log_{10}\theta$	dBW/4 kHz	for	$9.2^\circ < \theta \leq 48^\circ$
-18	dBW/4 kHz	for	$48^\circ < \theta \leq 180^\circ$

where  $\theta$  is as defined in paragraph (c)(1) of this section, and N is as defined in paragraph (d)(1) of this section. The EIRP density levels specified for  $\theta > 7^\circ$  may be exceeded by up to 3 dB in up to 10% of the range of theta ( $\theta$ ) angles from  $\pm 7$ -180°, and by up to 6 dB in the region of main reflector spillover energy.

(2) For co-polarized transmissions in the plane perpendicular to the GSO arc:

$24 - 25\log_{10}\theta$	dBW/4 kHz	for	$3^\circ \leq \theta \leq 48^\circ$
-18	dBW/4 kHz	for	$48^\circ < \theta \leq 180^\circ$

where  $\theta$  is as defined in paragraph (c)(1) of this section. These EIRP density levels may be exceeded by up to 6 dB in the region of main reflector spillover energy and in up to 10% of the range of  $\theta$  angles not included in that region, on each side of the line from the earth station to the target satellite.

(3) For cross-polarized transmissions in the plane tangent to the GSO arc and in the plane perpendicular to the GSO arc:

$11 - 25\log_{10}\theta$	dBW/4 kHz	for	$1.5^\circ \leq \theta \leq 7^\circ$
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where  $\theta$  is as defined in paragraph (c)(1) of this section.

(h) Digital earth station operation in the extended Ku-band.

(1) For co-polarized transmissions in the plane tangent to the GSO arc:

$15 - 25\log_{10}\theta$	dBW/4 kHz	for	$1.5^\circ \leq \theta \leq 7^\circ$
-6	dBW/4 kHz	for	$7^\circ < \theta \leq 9.2^\circ$
$18 - 25\log_{10}\theta$	dBW/4 kHz	for	$9.2^\circ < \theta \leq 48^\circ$
-24	dBW/4 kHz	for	$48^\circ < \theta \leq 180^\circ$

where  $\theta$  is as defined in paragraph (c)(1) of this section. The EIRP density levels specified for  $\theta > 7^\circ$  may be exceeded by up to 3 dB in up to 10% of the range of theta ( $\theta$ ) angles from  $\pm 7$ - $180^\circ$ , and by up to 6 dB in the region of main reflector spillover energy.

(2) For co-polarized transmissions in the plane perpendicular to the GSO arc:

$18 - 25\log_{10}\theta$	dBW/4 kHz	for	$3^\circ \leq \theta \leq 48^\circ$
-24	dBW/4 kHz	for	$48^\circ < \theta \leq 85^\circ$

where  $\theta$  is as defined in paragraph (c)(1) of this section. These EIRP density levels may be exceeded by up to 6 dB in the region of main reflector spillover energy and in up to 10% of the range of  $\theta$  angles not included in that region, on each side of the line from the earth station to the target satellite.

(3) For cross-polarized transmissions in the plane tangent to the GSO arc and in the plane perpendicular to the GSO arc:

$5 - 25\log_{10}\theta$	dBW/4 kHz	for	$1.5^\circ \leq \theta \leq 7^\circ$
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where  $\theta$  is as defined in paragraph (c)(1) of this section.

(4) A license application for earth station operation in a network using variable power density control of earth stations transmitting simultaneously in shared frequencies to the

same target satellite receiving beam may be routinely processed if the applicant certifies that the aggregate off-axis EIRP density from all co-frequency earth stations transmitting simultaneously to the same target satellite receiving beam, not resulting from colliding data bursts transmitted pursuant to a contention protocol, will not exceed the off-axis EIRP density limits permissible for a single earth station, as specified in paragraphs (h)(1) through (h)(3) of this section.

(i) Applications for authority for fixed earth station operation in the 5925-6425 MHz or 14.0-14.5 GHz band that do not qualify for routine processing under relevant criteria in this section, §§25.211 or 25.212 are subject to the requirements in §25.220.

47. In § 25.220, revise the section heading and paragraphs (a) and (b), remove and reserve paragraph (d)(1)(i), and revise paragraph (d)(2) to read as follows:

**§ 25.220 Non-routine transmit/receive earth station operations.**

(a) The requirements in this section apply to applications for, and operation of, earth stations transmitting in the conventional or extended C-bands, the conventional or extended Ku-bands, or the conventional Ka-band that do not qualify for routine licensing under relevant criteria in §§25.138, 25.211, 25.212, 25.218, 25.221(a)(1) or (a)(3), 25.222(a)(1) or (a)(3), 25.226(a)(1) or (a)(3), or 25.227(a)(1) or (a)(3).

(b) Applications filed pursuant to this section must include the information required by §25.115(g)(1).

\* \* \* \* \*

(d)(1) \* \* \*

(i) [Reserved]

\* \* \* \* \*

(2) Unless the non-routine uplink transmission levels are permitted under a coordination agreement with the space station operator, or unless coordination with the operator is not required pursuant to §25.140(d)(3) or (d)(4), the operator of an earth station licensed pursuant to this section must reduce its transmitted EIRP density to levels at or within relevant routine limits:

(i) Toward the part of the geostationary orbit arc within one degree of a subsequently launched, two-degree-compliant space station receiving in the same uplink band at an orbital location within six degrees of the earth station's target satellite, and

(ii) Toward a two-degree-compliant space station receiving in the same uplink band at an orbital location more than six degrees away from the target satellite if co-frequency reception by the space station is adversely affected by the non-routine earth station transmission levels.

\* \* \* \* \*

48. In § 25.221, revise the section heading, paragraphs (a)(1)(i), (a)(2), (a)(3), (b) introductory text, and (b)(1) introductory text, remove and reserve paragraphs (b)(1)(i) and (ii), and revise paragraphs (b)(2) and (3) to read as follows:

**§ 25.221 Blanket licensing provisions for ESVs operating with GSO FSS space stations in the 3700-4200 MHz and 5925-6425 MHz bands.**

(a) \* \* \*

(1) \* \* \*

(i) \* \* \*

(A) Off-axis EIRP spectral density emitted in the plane tangent to the GSO arc, as defined in §25.103, shall not exceed the following values:

26.3 - 25log $\theta$	dBW/4 kHz	for	$1.5^{\circ} \leq \theta \leq 7^{\circ}$
5.3	dBW/4 kHz	for	$7^{\circ} < \theta \leq 9.2^{\circ}$
29.3 - 25log $\theta$	dBW/4 kHz	for	$9.2^{\circ} < \theta \leq 48^{\circ}$
-12.7	dBW/4 kHz	for	$48^{\circ} < \theta \leq 180^{\circ}$

Where theta ( $\theta$ ) is the angle in degrees from a line from the earth station antenna to the assigned orbital location of the target satellite. The EIRP density levels specified for  $\theta > 7^{\circ}$  may be exceeded by up to 3 dB in up to 10% of the range of theta ( $\theta$ ) angles from  $\pm 7^{\circ}$  to  $180^{\circ}$ , and by up to 6 dB in the region of main reflector spillover energy.

(B) In the plane perpendicular to the GSO arc, as defined in §25.103, EIRP spectral density of co-polarized signals shall not exceed the following values:

29.3 - 25log $\theta$	dBW/4 kHz	for	$3.0^{\circ} \leq \theta \leq 48^{\circ}$
-12.7	dBW/4 kHz	for	$48^{\circ} < \theta \leq 180^{\circ}$

Where  $\theta$  is as defined in paragraph (a)(1)(i)(A) of this section. These EIRP density levels may be exceeded by up to 6 dB in the region of main reflector spillover energy and in up to 10% of the range of  $\theta$  angles not included in that region, on each side of the line from the earth station to the target satellite.

(C) The off-axis EIRP spectral-density of cross-polarized signals shall not exceed the following values in the plane tangent to the GSO arc or in the plane perpendicular to the GSO arc:

16.3 - 25log $\theta$	dBW/4 kHz	for	$1.8^{\circ} \leq \theta \leq 7.0^{\circ}$
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Where  $\theta$  is as defined in paragraph (a)(1)(i)(A) of this section.

\* \* \* \* \*

(2) The following requirements apply to ESV systems that operate with off-axis EIRP spectral-densities in excess of the levels in paragraph (a)(1)(i) or (a)(3)(i) of this section under licenses granted based on certifications filed pursuant to paragraph (b)(2) of this section.

(i) An ESV or ESV system licensed based on certifications filed pursuant to paragraph (b)(2) of this section must operate in accordance with the off-axis EIRP density specifications provided to the target satellite operator in order to obtain the certifications.

(ii) Any ESV transmitter operating under a license granted based on certifications filed pursuant to paragraph (b)(2) of this section must be self-monitoring and capable of shutting itself off and must cease or reduce emissions within 100 milliseconds after generating off-axis EIRP-density in excess of the specifications supplied to the target satellite operator.

(iii) A system with variable power control of individual ESV transmitters must monitor the aggregate off-axis EIRP density from simultaneously transmitting ESV transmitters at the system's network control and monitoring center. If simultaneous operation of two or more ESV transmitters causes aggregate off-axis EIRP density to exceed the off-axis EIRP-density specifications supplied to the target satellite operator, the network control and monitoring center must command those transmitters to cease emissions or reduce the aggregate EIRP density to a level at or below those specifications, and the transmitters must comply within 100 milliseconds of receiving the command.

(3) The following requirements apply to an ESV system that uses variable power control of individual earth stations transmitting simultaneously in the same frequencies to the same target satellite, unless the ESV system operates pursuant to paragraph (a)(2) of this section.

(i) Aggregate EIRP density from co-frequency earth stations in each target satellite receiving beam, not resulting from colliding data bursts transmitted pursuant to a contention protocol, will not exceed the limits defined in paragraph (a)(1)(i) of this section.

(ii) Each ESV transmitter must be self-monitoring and capable of shutting itself off and must cease or reduce emissions within 100 milliseconds after generating off-axis EIRP density in excess of the limit in paragraph (a)(3)(i) of this section.

(iii) Aggregate power density from simultaneously transmitting ESV transmitters must be monitored at the system's network control and monitoring center. If simultaneous operation of two or more ESV transmitters causes aggregate off-axis EIRP density to exceed the off-axis EIRP density limit in paragraph (a)(3)(i) of this section, the network control and monitoring center must command those transmitters to cease emissions or reduce the aggregate EIRP density to a level at or below that limit, and those transmitters must comply within 100 milliseconds of receiving the command.

\* \* \* \* \*

(b) Applications for ESV operation in the 5925-6425 MHz (Earth-to-space) band to GSO satellites in the FSS must include, in addition to the particulars of operation identified on FCC Form 312, and associated Schedule B, applicable technical demonstrations or

certifications pursuant to paragraph (b)(1), (b)(2), or (b)(3) of this section and the documentation identified in paragraphs (b)(4) through (b)(6) of this section.

(1) An ESV applicant proposing to implement a transmitter under paragraph (a)(1) of this section must provide the information required by §25.115(g)(1). An applicant proposing to implement a transmitter under paragraph (a)(1)(ii)(A) of this section must also provide the certifications identified in paragraph (b)(1)(iii) of this section. An ESV applicant proposing to implement a transmitter under paragraph (a)(1)(ii)(B) of this section must also provide the demonstrations identified in paragraph (b)(1)(iv) of this section.

(i)-(ii) [Reserved]

\* \* \* \* \*

(2) An applicant proposing to operate with off-axis EIRP density in excess of the levels specified in paragraph (a)(1)(i) or (a)(3)(i) of this section must provide the following in exhibits to its earth station application:

(i) Off-axis EIRP density data pursuant to §25.115(g)(1):

(ii) The certifications required by §25.220(d);

(iii) A detailed showing that each ESV transmitter in the system will automatically cease or reduce emissions within 100 milliseconds after generating EIRP density exceeding specifications provided to the target satellite operator;

(iv) A detailed showing that the aggregate power density from simultaneously transmitting ESV transmitters will be monitored at the system's network control and monitoring center; that if simultaneous operation of two or more ESV transmitters causes the aggregate off-axis EIRP density to exceed the off-axis EIRP density specifications supplied to the target satellite operator, the network control and monitoring center will



command those transmitters to cease emissions or reduce the aggregate EIRP density to a level at or below those specifications; and that those transmitters will comply within 100 milliseconds of receiving the command; and

(v) A certification that the ESV system will operate in compliance with the power limits in §25.204(h).

(3) An applicant proposing to implement an ESV system subject to paragraph (a)(3) of this section must provide the following information in exhibits to its earth station application:

(i) Off-axis EIRP density data pursuant to §25.115(g)(1);

(ii) A detailed showing of the measures that will be employed to maintain aggregate EIRP density at or below the limit in paragraph (a)(3)(i) of this section;

(iii) A detailed showing that each ESV terminal will automatically cease or reduce emissions within 100 milliseconds after generating off-axis EIRP density exceeding the limit in paragraph (a)(3)(i) of this section;

(iv) A detailed showing that the aggregate power density from simultaneously transmitting ESV transmitters will be monitored at the system's network control and monitoring center; that if simultaneous operation of two or more ESV transmitters causes aggregate off-axis EIRP density to exceed the off-axis EIRP density limit in paragraph (a)(3)(i) of this section, the network control and monitoring center will command those transmitters to cease emissions or reduce the aggregate EIRP density to a level at or below that limit; and that those transmitters will comply within 100 milliseconds of receiving the command; and

(v) Certification that the ESV system will operate in compliance with the power limits in §25.204(h).

\* \* \* \* \*

49. In § 25.222, revise the section heading, paragraphs (a)(1)(i), (a)(2), and (a)(3), revise paragraph (b) introductory text and paragraph (b)(1) introductory text, remove and reserve paragraphs (b)(1)(i) and (ii), and revise paragraphs (b)(2) and (3) to read as follows:

**§ 25.222 Blanket licensing provisions for ESVs operating with GSO FSS space stations in the 10.95-11.2 GHz, 11.45-11.7 GHz, 11.7-12.2 GHz, and 14.0-14.5 GHz bands.**

(a) \* \* \*

(1) \* \* \*

(i) \* \* \*

(A) Off-axis EIRP spectral density emitted in the plane tangent to the GSO arc, as defined in §25.103, shall not exceed the following values:

15 - 25log $\theta$	dBW/4 kHz	for	$1.5^{\circ} \leq \theta \leq 7^{\circ}$
-6	dBW/4 kHz	for	$7^{\circ} < \theta \leq 9.2^{\circ}$
18 - 25log $\theta$	dBW/4 kHz	for	$9.2^{\circ} < \theta \leq 19.1^{\circ}$
-14	dBW/4kHz	for	$19.1^{\circ} < \theta \leq 180^{\circ}$

Where theta ( $\theta$ ) is the angle in degrees from a line from the earth station antenna to the assigned orbital location of the target satellite. The EIRP density levels specified for  $\theta >$

7° may be exceeded by up to 3 dB in up to 10% of the range of theta ( $\theta$ ) angles from  $\pm 7$ -180°, and by up to 6 dB in the region of main reflector spillover energy.

(B) The off-axis EIRP density of co-polarized signals shall not exceed the following values in the plane perpendicular to the GSO arc, as defined in §25.103:

$18 - 25\log\theta$	dBW/4 kHz	for	$3.0^\circ \leq \theta \leq 19.1^\circ$
-14	dBW/4kHz	for	$19.1^\circ < \theta \leq 180^\circ$

Where  $\theta$  is as defined in paragraph (a)(1)(i)(A) of this section. These EIRP density levels may be exceeded by up to 6 dB in the region of main reflector spillover energy and in up to 10% of the range of  $\theta$  angles not included in that region, on each side of the line from the earth station to the target satellite.

(C) The off-axis EIRP density of cross-polarized signals shall not exceed the following values in the plane tangent to the GSO arc or in the plane perpendicular to the GSO arc:

$5 - 25\log\theta$	dBW/4 kHz	for	$1.8^\circ \leq \theta \leq 7.0^\circ$
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Where  $\theta$  is as defined in paragraph (a)(1)(i)(A) of this section.

\* \* \* \* \*

(2) The following requirements apply to ESV systems that operate with off-axis EIRP spectral-densities in excess of the levels in paragraph (a)(1)(i) or (a)(3)(i) of this section under licenses granted based on certifications filed pursuant to paragraph (b)(2) of this section.

(i) An ESV or ESV system licensed based on certifications filed pursuant to paragraph (b)(2) of this section must operate in accordance with the off-axis EIRP density specifications provided to the target satellite operator in order to obtain the certifications.

(ii) Any ESV transmitter operating under a license granted based on certifications filed pursuant to paragraph (b)(2) of this section must be self-monitoring and capable of shutting itself off and must cease or reduce emissions within 100 milliseconds after generating off-axis EIRP-density in excess of the specifications supplied to the target satellite operator.

(iii) A system with variable power control of individual ESV transmitters must monitor the aggregate off-axis EIRP density from simultaneously transmitting ESV transmitters at the system's network control and monitoring center. If simultaneous operation of two or more ESV transmitters causes aggregate off-axis EIRP density to exceed the off-axis EIRP-density specifications supplied to the target satellite operator, the network control and monitoring center must command those transmitters to cease emissions or reduce the aggregate EIRP density to a level at or below those specifications, and the transmitters must comply within 100 milliseconds of receiving the command.

(3) The following requirements apply to an ESV system that uses variable power control of individual earth stations transmitting simultaneously in the same frequencies to the same target satellite, unless the ESV system operates pursuant to paragraph (a)(2) of this section.

(i) Aggregate EIRP density from co-frequency earth stations in each target satellite receiving beam, not resulting from colliding data bursts transmitted pursuant to a contention protocol, will not exceed the limits defined in paragraph (a)(1)(i) of this section.

(ii) Each ESV transmitter must be self-monitoring and capable of shutting itself off and must cease or reduce emissions within 100 milliseconds after generating off-axis EIRP density in excess of the limit in paragraph (a)(3)(i) of this section.

(iii) Aggregate power density from simultaneously transmitting ESV transmitters must be monitored at the system's network control and monitoring center. If simultaneous operation of two or more ESV transmitters causes aggregate off-axis EIRP density to exceed the off-axis EIRP density limit in paragraph (a)(3)(i) of this section, the network control and monitoring center must command those transmitters to cease emissions or reduce the aggregate EIRP density to a level at or below that limit, and those transmitters must comply within 100 milliseconds of receiving the command.

\* \* \* \* \*

(b) Applications for ESV operation in the 14.0-14.5 GHz (Earth-to-space) band to GSO satellites in the FSS must include, in addition to the particulars of operation identified on FCC Form 312, and associated Schedule B, applicable technical demonstrations or certifications pursuant to paragraph (b)(1), (b)(2), or (b)(3) of this section and the documentation identified in paragraphs (b)(4) through (6) of this section.

(1) An ESV applicant proposing to implement a transmitter under paragraph (a)(1) of this section must provide the information required by §25.115(g)(1). An applicant proposing to implement a transmitter under paragraph (a)(1)(ii)(A) of this section must also provide the certifications identified in paragraph (b)(1)(iii) of this section. An ESV applicant proposing to implement a transmitter under paragraph (a)(1)(ii)(B) of this section must also provide the demonstrations identified in paragraph (b)(1)(iv) of this section.

(i)-(ii) [Reserved]

\* \* \* \* \*

(2) An applicant proposing to operate with off-axis EIRP density in excess of the levels in paragraph (a)(1)(i) or (a)(3)(i) of this section must provide the following in exhibits to its earth station application:

- (i) Off-axis EIRP density data pursuant to §25.115(g)(1);
- (ii) The certifications required by §25.220(d);
- (iii) A detailed showing that each ESV transmitter in the system will automatically cease or reduce emissions within 100 milliseconds after generating EIRP density exceeding specifications provided to the target satellite operator; and
- (iv) A detailed showing that the aggregate power density from simultaneously transmitting ESV transmitters will be monitored at the system's network control and monitoring center; that if simultaneous operation of two or more ESV transmitters causes the aggregate off-axis EIRP density to exceed the off-axis EIRP density specifications supplied to the target satellite operator, the network control and monitoring center will command those transmitters to cease emissions or reduce the aggregate EIRP density to a level at or below those specifications; and that those transmitters will comply within 100 milliseconds of receiving the command.

(3) An applicant proposing to implement an ESV system subject to paragraph (a)(3) of this section must provide the following information in exhibits to its earth station application:

- (i) Off-axis EIRP density data pursuant to §25.115(g)(1);
- (ii) A detailed showing of the measures that will be employed to maintain aggregate EIRP density at or below the limit in paragraph (a)(3)(i) of this section;

(iii) a detailed showing that each ESV terminal will automatically cease or reduce emissions within 100 milliseconds after generating off-axis EIRP density exceeding the limit in paragraph (a)(3)(i) of this section; and

(iv) A detailed showing that the aggregate power density from simultaneously transmitting ESV transmitters will be monitored at the system's network control and monitoring center; that if simultaneous operation of two or more ESV transmitters causes aggregate off-axis EIRP density to exceed the off-axis EIRP density limit in paragraph (a)(3)(i) of this section, the network control and monitoring center will command those transmitters to cease emissions or reduce the aggregate EIRP density to a level at or below that limit; and that those transmitters will comply within 100 milliseconds of receiving the command.

\* \* \* \* \*

50. In § 25.223, revise paragraphs (b), (c), and (d) to read as follows:

**§ 25.223 Alternative licensing rules for feeder-link earth stations in the 17/24 GHz BSS.**

\* \* \* \* \*

(b) Applications for earth station licenses in the 24.75-25.25 GHz portion of 17/24 GHz BSS may be routinely processed if they meet the following requirements:

(1) The EIRP density of co-polarized signals will not exceed the following values in the plane tangent to the GSO arc, as defined in §25.103, under clear sky conditions:

32.5 - 25log( $\theta$ )	dBW/MHz	for	$2^{\circ} \leq \theta \leq 7^{\circ}$
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11.4	dBW/MHz	for	$7^{\circ} \leq \theta \leq 9.2^{\circ}$
$35.5 - 25\log(\theta)$	dBW/MHz	for	$9.2^{\circ} \leq \theta \leq 19.1^{\circ}$
3.5	dBW/MHz	for	$19.1^{\circ} \leq \theta \leq 180^{\circ}$

Where  $\theta$  is the angle in degrees from a line from the earth station antenna to the assigned orbital location of the target satellite.

(2) The EIRP density of co-polarized signals will not exceed the following values under clear sky conditions in the plane perpendicular to the GSO arc, as defined in §25.103:

$35.5 - 25\log(\theta)$	dBW/MHz	for	$2^{\circ} \leq \theta \leq 7^{\circ}$
14.4	dBW/MHz	for	$7^{\circ} \leq \theta \leq 9.2^{\circ}$
$38.5 - 25\log(\theta)$	dBW/MHz	for	$9.2^{\circ} \leq \theta \leq 19.1^{\circ}$
6.5	dBW/MHz	for	$19.1^{\circ} \leq \theta \leq 180^{\circ}$

Where  $\theta$  is as defined in paragraph (b)(1) of this section.

(3) The EIRP density levels specified in paragraphs (a)(1) and (2) of this section may be exceeded by up to 3 dB for values of  $\theta > 7^{\circ}$ , in 10% of the range of theta ( $\theta$ ) angles from  $7^{\circ}$ - $180^{\circ}$  on each side of the line from the earth station to the target satellite.

(4) The EIRP density of cross-polarized signals will not exceed the following values in the plane tangent to the GSO arc or in the plane perpendicular to the GSO arc, under clear sky conditions:

$22.5 - 25\log(\theta)$	dBW/MHz	for	$2^{\circ} \leq \theta \leq 7^{\circ}$
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Where  $\theta$  is as defined in paragraph (b)(1) of this section.



(c) An applicant proposing levels in excess of those specified in paragraph (b) of this section must certify that potentially affected parties acknowledge and do not object to the use of the applicant's higher EIRP densities.

(1) For proposed non-conforming EIRP density levels up to 3 dB in excess of the limits defined in paragraph (b) of this section, potentially affected parties are operators of co-frequency U.S.-authorized 17/24 GHz BSS space stations at angular separations of up to  $\pm 6^\circ$  from the proposed satellite points of communication. For proposed EIRP density levels more than 3 dB but not more than 6 dB in excess of the limits defined in paragraph (b) of this section, potentially affected parties are operators of co-frequency U.S.-authorized space stations up to  $\pm 10^\circ$  from the proposed satellite points of communication.

(2) Notwithstanding paragraph (c)(1) of this section, an applicant need not certify that the operator of a co-frequency space station consents to proposed non-conforming operation if EIRP density from the proposed earth station will not exceed the levels specified in paragraph (b) toward any position in the geostationary arc within one degree of the assigned orbital location of the co-frequency space station.

(3) Power density levels more than 6 dB in excess of the limits defined in paragraph (b) of this section will not be permitted.

(d)(1) The operator of an earth station licensed pursuant to paragraph (c) of this section will bear the burden of coordinating with the operator of a co-frequency space station subsequently licensed by the Commission for operation at an orbital location  $10^\circ$  or less from the earth station's target satellite if the co-frequency space station's reception of conforming uplink transmissions is, or would be, adversely affected by the earth station's non-conforming operation. If no agreement is reached, the earth station operator must

reduce EIRP density toward that co-frequency space station to a level in conformance with the envelopes specified in paragraph (b) of this section.

(2) The operator of an earth station licensed pursuant to paragraph (c)(1) or (c)(2) of this section must reduce EIRP density to levels at or within those specified in paragraph (b) toward a U.S.-licensed space station receiving in the same uplink band at an angular separation from the earth station's target satellite greater than is required in paragraph (c)(1) of this section, if the co-frequency space station's reception of conforming uplink transmissions is adversely affected by the non-conforming earth station operation, unless the non-conforming operation is permitted under a coordination agreement with the operator of the co-frequency space station.

51. In § 25.226, revise the section heading, paragraphs (a)(1)(i), (a)(2), and (a)(3), (b) introductory text, and (b)(1) introductory text, remove and reserve paragraphs (b)(1)(i) and (ii), and revise paragraphs (b)(2) and (b)(3) to read as follows:

**§ 25.226 Blanket licensing provisions for domestic, U.S. VMESs operating with GSO FSS space stations in the 10.95-11.2 GHz, 11.45-11.7 GHz, 11.7-12.2 GHz, and 14.0-14.5 GHz bands.**

(a) \* \* \*

(1) \* \* \*

(i) \* \* \*

(A) Off-axis EIRP spectral density emitted in the plane tangent to the GSO arc, as defined in §25.103, shall not exceed the following values:

15 - 25log $\theta$	dBW/4 kHz	for	$1.5^{\circ} \leq \theta \leq 7^{\circ}$
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-6	dBW/4 kHz	for	$7^{\circ} < \theta \leq 9.2^{\circ}$
$18 - 25\log\theta$	dBW/4 kHz	for	$9.2^{\circ} < \theta \leq 19.1^{\circ}$
-14	dBW/4 kHz	for	$19.1^{\circ} < \theta \leq 180^{\circ}$

where theta ( $\theta$ ) is the angle in degrees from a line from the earth station antenna to the assigned orbital location of the target satellite. The EIRP density levels specified for  $\theta > 7^{\circ}$  may be exceeded by up to 3 dB in up to 10% of the range of theta ( $\theta$ ) angles from  $\pm 7^{\circ}$ - $180^{\circ}$ , and by up to 6 dB in the region of main reflector spillover energy.

(B) The off-axis EIRP spectral density of co-polarized signals shall not exceed the following values in the plane perpendicular to the GSO arc, as defined in §25.103:

$18 - 25\log\theta$	dBW/4 kHz	for	$3.0^{\circ} \leq \theta \leq 19.1^{\circ}$
-14	dBW/4 kHz	for	$19.1^{\circ} < \theta \leq 180^{\circ}$

Where  $\theta$  is as defined in paragraph (a)(1)(i)(A) of this section. These EIRP density levels may be exceeded by up to 6 dB in the region of main reflector spillover energy and in up to 10% of the range of  $\theta$  angles not included in that region, on each side of the line from the earth station to the target satellite.

(C) The EIRP density of cross-polarized signals shall not exceed the following values in the plane tangent to the GSO arc or in the plane perpendicular to the GSO arc:

$5 - 25\log\theta$	dBW/4 kHz	for	$1.8^{\circ} \leq \theta \leq 7.0^{\circ}$
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where  $\theta$  is as defined in paragraph (a)(1)(i)(A) of this section.

\* \* \* \* \*

(2) The following requirements apply to VMES systems that operate with off-axis EIRP spectral-densities in excess of the levels in paragraph (a)(1)(i) or (a)(3)(i) of this section

under licenses granted based on certifications filed pursuant to paragraph (b)(2) of this section.

(i) A VMES or VMES system licensed based on certifications filed pursuant to paragraph (b)(2) of this section must operate in accordance with the off-axis EIRP density specifications provided to the target satellite operator in order to obtain the certifications.

(ii) Any VMES transmitter operating under a license granted based on certifications filed pursuant to paragraph (b)(2) of this section must be self-monitoring and capable of shutting itself off and must cease or reduce emissions within 100 milliseconds after generating off-axis EIRP-density in excess of the specifications supplied to the target satellite operator.

(iii) A system with variable power control of individual VMES transmitters must monitor the aggregate off-axis EIRP density from simultaneously transmitting VMES transmitters at the system's network control and monitoring center. If simultaneous operation of two or more VMES transmitters causes aggregate off-axis EIRP density to exceed the off-axis EIRP density specifications supplied to the target satellite operator, the network control and monitoring center must command those transmitters to cease emissions or reduce the aggregate EIRP density to a level at or below those specifications and the transmitters must comply within 100 milliseconds of receiving the command.

(3) The following requirements apply to a VMES system that uses variable power control of individual VMES earth stations transmitting simultaneously in the same frequencies to the same target satellite, unless the system operates pursuant to paragraph (a)(2) of this section.

(i) Aggregate EIRP density from co-frequency earth stations in each target satellite receiving beam, not resulting from colliding data bursts transmitted pursuant to a contention protocol, will not exceed the limits defined in paragraph (a)(1)(i) of this section.

(ii) Each VMES transmitter must be self-monitoring and capable of shutting itself off and must cease or reduce emissions within 100 milliseconds after generating off-axis EIRP density in excess of the limit in paragraph (a)(3)(i) of this section.

(iii) Aggregate power density from simultaneously transmitting VMES transmitters must be monitored at the system's network control and monitoring center. If simultaneous operation of two or more transmitters in a VMES network causes aggregate off-axis EIRP density to exceed the off-axis EIRP density limit in paragraph (a)(3)(i) of this section, the network control and monitoring center must command those transmitters to cease emissions or reduce the aggregate EIRP density to a level at or below that limit, and those transmitters must comply within 100 milliseconds of receiving the command.

\* \* \* \* \*

(b) Applications for VMES operation in the 14.0-14.5 GHz (Earth-to-space) band to GSO satellites in the FSS must include, in addition to the particulars of operation identified on FCC Form 312, and associated Schedule B, applicable technical demonstrations pursuant to paragraph (b)(1), (b)(2), or (b)(3) of this section and the documentation identified in paragraphs (b)(4) through (b)(8) of this section.

(1) A VMES applicant proposing to implement a transmitter under paragraph (a)(1) of this section must provide the information required by §25.115(g)(1). An applicant proposing to implement a transmitter under paragraph (a)(1)(ii)(A) of this section must

also provide the certifications identified in paragraph (b)(1)(iii) of this section. An applicant proposing to implement a transmitter under paragraph (a)(1)(ii)(B) of this section must also provide the demonstrations identified in paragraph (b)(1)(iv) of this section.

(i)-(ii) [Reserved]

\* \* \* \* \*

(2) An applicant proposing to operate with off-axis EIRP density in excess of the levels in paragraph (a)(1)(i) or (a)(3)(i) of this section must provide the following in exhibits to its earth station application:

(i) Off-axis EIRP density data pursuant to §25.115(g)(1);

(ii) The certifications required by §25.220(d);

(iii) A detailed showing that each VMES transmitter in the system will automatically cease or reduce emissions within 100 milliseconds after generating EIRP density exceeding specifications provided to the target satellite operator; and

(iv) A detailed showing that the aggregate power density from simultaneously transmitting VMES transmitters will be monitored at the system's network control and monitoring center; that if simultaneous operation of two or more VMES transmitters causes the aggregate off-axis EIRP density to exceed the off-axis EIRP density specifications supplied to the target satellite operator, the network control and monitoring center will command those transmitters to cease emissions or reduce the aggregate EIRP density to a level at or below those specifications; and that those transmitters will comply within 100 milliseconds of receiving the command.

(3) An applicant proposing to implement a VMES system subject to paragraph (a)(3) of this section must provide the following information in exhibits to its earth station application:

- (i) Off-axis EIRP density data pursuant to §25.115(g)(1);
- (ii) A detailed showing of the measures that will be employed to maintain aggregate EIRP density at or below the limit in paragraph (a)(3)(i) of this section;
- (iii) A detailed showing that each VMES terminal will automatically cease or reduce emissions within 100 milliseconds after generating off-axis EIRP density exceeding the limit in paragraph (a)(3)(i) of this section; and
- (iv) A detailed showing that the aggregate power density from simultaneously transmitting ESV transmitters will be monitored at the system's network control and monitoring center; that if simultaneous operation of two or more transmitters in the VMES network causes aggregate off-axis EIRP density to exceed the off-axis EIRP density limit in paragraph (a)(3)(i) of this section, the network control and monitoring center will command those transmitters to cease emissions or reduce the aggregate EIRP density to a level at or below that limit; and that those transmitters will comply within 100 milliseconds of receiving the command.

\* \* \* \* \*

52. In § 25.227, revise the section heading, paragraphs (a)(1)(i), (a)(2), (a)(3), (b) introductory text, and (b)(1) introductory text, remove and reserve paragraphs (b)(1)(i) and (ii), and revise paragraphs (b)(2) and (b)(3) to read as follows:

**§ 25.227 Blanket licensing provisions for ESAAs operating with GSO FSS space stations in the 10.95-11.2 GHz, 11.45-11.7 GHz, 11.7-12.2 GHz, and 14.0-14.5 GHz bands.**

(a) \* \* \*

(1) \* \* \*

(i) \* \* \*

(A) EIRP spectral density emitted in the plane tangent to the GSO arc, as defined in §25.103, must not exceed the following values:

15 - 25 log <sub>10</sub> θ	dBW/4 kHz	for	1.5° ≤ θ ≤ 7°
-6	dBW/4 kHz	for	7° < θ ≤ 9.2°
18 - 25 log <sub>10</sub> θ	dBW/4 kHz	for	9.2° < θ ≤ 19.1°
-14	dBW/4 kHz	for	19.1° < θ ≤ 180°

where theta (θ) is the angle in degrees from a line from the earth station antenna to the assigned orbital location of the target satellite. The EIRP density levels specified for θ > 7° may be exceeded by up to 3 dB in up to 10% of the range of theta (θ) angles from ±7-180°, and by up to 6 dB in the region of main reflector spillover energy.

(B) The EIRP spectral density of co-polarized signals must not exceed the following values in the plane perpendicular to the GSO arc, as defined in §25.103:

18 - 25logθ	dBW/4 kHz	for	3.0° ≤ θ ≤ 19.1°
-14	dBW/4 kHz	for	19.1° < θ ≤ 180°

where θ is as defined in paragraph (a)(1)(i)(A) of this section. These EIRP density levels may be exceeded by up to 6 dB in the region of main reflector spillover energy and in up



to 10% of the range of  $\theta$  angles not included in that region, on each side of the line from the earth station to the target satellite.

(C) The off-axis EIRP spectral-density of cross-polarized signals must not exceed the following values in the plane tangent to the GSO arc or in the plane perpendicular to the GSO arc:

$5 - 25\log_{10}\theta$	dBW/4 kHz	for	$1.8^\circ < \theta \leq 7^\circ$
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where  $\theta$  is as defined in paragraph (a)(1)(i)(A) of this section.

\* \* \* \* \*

(2) The following requirements apply to ESAA systems that operate with off-axis EIRP spectral-densities in excess of the levels in paragraph (a)(1)(i) or (a)(3)(i) of this section under licenses granted based on certifications filed pursuant to paragraph (b)(2) of this section.

(i) An ESAA or ESAA system licensed based on certifications filed pursuant to paragraph (b)(2) of this section must operate in accordance with the off-axis EIRP density specifications provided to the target satellite operator in order to obtain the certifications.

(ii) Any ESAA transmitter operating under a license granted based on certifications filed pursuant to paragraph (b)(2) of this section must be self-monitoring and capable of shutting itself off and must cease or reduce emissions within 100 milliseconds after generating off-axis EIRP-density in excess of the specifications supplied to the target satellite operator.

(iii) A system with variable power control of individual ESAA transmitters must monitor the aggregate off-axis EIRP density from simultaneously transmitting ESAA transmitters

at the system's network control and monitoring center. If simultaneous operation of two or more ESAA transmitters causes aggregate off-axis EIRP density to exceed the off-axis EIRP density specifications supplied to the target satellite operator, the network control and monitoring center must command those transmitters to cease emissions or reduce the aggregate EIRP density to a level at or below those specifications, and the transmitters must comply within 100 milliseconds of receiving the command.

(3) The following requirements apply to an ESAA system that uses variable power-density control of individual ESAA earth stations transmitting simultaneously in the same frequencies to the same target satellite, unless the system operates pursuant to paragraph (a)(2) of this section.

(i) Aggregate EIRP density from co-frequency earth stations in each target satellite receiving beam, not resulting from colliding data bursts transmitted pursuant to a contention protocol, will not exceed the limits specified in paragraph (a)(1)(i) of this section.

(ii) Each ESAA transmitter must be self-monitoring and capable of shutting itself off and must cease or reduce emissions within 100 milliseconds after generating off-axis EIRP density in excess of the limit in paragraph (a)(3)(i) of this section.

(iii) A system with variable power control of individual ESAA transmitters must monitor aggregate power density from simultaneously transmitting ESAA transmitters at the network control and monitoring center. If simultaneous operation of two or more transmitters causes aggregate off-axis EIRP density to exceed the off-axis EIRP density limit in paragraph (a)(3)(i) of this section, the network control and monitoring center must command those transmitters to cease emissions or reduce the aggregate EIRP

density to a level at or below that limit, and those transmitters must comply within 100 milliseconds of receiving the command.

\* \* \* \* \*

(b) Applications for ESAA operation in the 14.0-14.5 GHz (Earth-to-space) band to GSO satellites in the FSS shall include, in addition to the particulars of operation identified on FCC Form 312, and associated Schedule B, the applicable technical demonstrations in paragraphs (b)(1), (b)(2), or (b)(3), and the documentation identified in paragraphs (b)(4) through (b)(8) of this section.

(1) An ESAA applicant proposing to implement a transmitter under paragraph (a)(1) of this section must provide the information required by §25.115(g)(1). An applicant proposing to implement a transmitter under paragraph (a)(1)(ii)(A) of this section must also provide the certifications identified in paragraph (b)(1)(iii) of this section. An applicant proposing to implement a transmitter under paragraph (a)(1)(ii)(B) of this section must also provide the demonstrations identified in paragraph (b)(1)(iv) of this section.

(i)-(ii) [Reserved]

\* \* \* \* \*

(2) An ESAA applicant proposing to operate with off-axis EIRP density in excess of the levels in paragraph (a)(1)(i) or (a)(3)(i) of this section must provide the following in exhibits to its earth station application:

(i) Off-axis EIRP density data pursuant to §25.115(g)(1);

(ii) The certifications required by §25.220(d); and

(iii) A detailed showing that each ESAA transmitter in the system will automatically cease or reduce emissions within 100 milliseconds after generating EIRP density exceeding specifications provided to the target satellite operator; and

(iv) A detailed showing that the aggregate power density from simultaneously transmitting ESAA transmitters will be monitored at the system's network control and monitoring center; that if simultaneous operation of two or more ESAA transmitters causes the aggregate off-axis EIRP density to exceed the off-axis EIRP density specifications supplied to the target satellite operator, the network control and monitoring center will command those transmitters to cease emissions or reduce the aggregate EIRP density to a level at or below those specifications; and that those transmitters will comply within 100 milliseconds of receiving the command.

(3) An applicant proposing to implement an ESAA system subject to paragraph (a)(3) of this section must provide the following information in exhibits to its earth station application:

- (i) Off-axis EIRP density data pursuant to §25.115(g)(1);
- (ii) A detailed showing of the measures that will be employed to maintain aggregate EIRP density at or below the limit in paragraph (a)(3)(i) of this section;
- (iii) A detailed showing that each ESAA terminal will automatically cease or reduce emissions within 100 milliseconds after generating off-axis EIRP density exceeding the limit in paragraph (a)(3)(i) of this section; and
- (iv) A detailed showing that the aggregate power density from simultaneously transmitting ESAA transmitters will be monitored at the system's network control and monitoring center; that if simultaneous operation of two or more transmitters in the

ESAA network causes aggregate off-axis EIRP density to exceed the off-axis density limit in paragraph (a)(3)(i) of this section, the network control and monitoring center will command those transmitters to cease emissions or reduce the aggregate EIRP density to a level at or below that limit; and that those transmitters will comply within 100 milliseconds of receiving the command.

\* \* \* \* \*

53. In § 25.257, revise the section heading and the second sentence in paragraph (e) to read as follows:

**§ 25.257 Special requirements for NGSO MSS operations in the 29.1-29.25 GHz band regarding LMDS.**

\* \* \* \* \*

(e) \* \* \* In this regard, any single NGSO MSS operator may identify only one feeder-link earth station complex protection zone in each category identified in §101.147(y)(2) of this chapter until the other NGSO MSS operator has been given an opportunity to select a location from the same category.

54. In § 25.258, revise the section heading and the first sentence in paragraph (b) to read as follows:

**§ 25.258 Sharing between NGSO MSS feeder-link stations and GSO FSS services in the 29.25-29.5 GHz band.**

\* \* \* \* \*

(b) Licensed GSO FSS earth stations in the vicinity of operational NGSO MSS feeder-link earth station complexes must, to the maximum extent possible, operate with frequency/polarization selections that will minimize unacceptable interference with reception of GSO FSS and NGSO MSS uplink transmissions in the 29.25-29.5 GHz band. \* \* \*

\* \* \* \* \*

**§ 25.264 [Amended]**

55. Amend § 25.264 as follows:

- a. Revise the section heading;
- b. Revise paragraph (a) introductory text and paragraph (a)(5);
- c. Add paragraph (a)(6);
- d. Revise paragraph (b) introductory text;
- e. Revise the second sentence in paragraph (b)(1), paragraph (b)(2)(ii), the first sentence in paragraph (b)(3);
- f. Revise the first sentence in paragraph (c);
- g. Revise (d) introductory text, and the first two sentences in paragraph (d)(1)(ii);  
and
- h. Add paragraph (b)(4).

**§25.264 Requirements to facilitate reverse-band operation in the 17.3-17.8 GHz band of 17/24 GHz BSS and DBS Service space stations.**

(a) Each 17/24 GHz BSS space station applicant or licensee must submit a series of tables or graphs containing predicted off-axis gain data for each antenna that will transmit in the

17.3-17.8 GHz frequency band, in accordance with the following specifications. Using a Cartesian coordinate system wherein the X axis is tangent to the geostationary orbital arc with the positive direction pointing east, i.e., in the direction of travel of the satellite; the Y axis is parallel to a line passing through the geographic north and south poles of the Earth, with the positive direction pointing south; and the Z axis passes through the satellite and the center of the Earth, with the positive direction pointing toward the Earth, the applicant or licensee must provide the predicted transmitting antenna off-axis antenna gain information:

\* \* \* \* \*

(5) Over a greater angular measurement range, if necessary, to account for any planned spacecraft orientation bias or change in operating orientation relative to the reference coordinate system. The applicant or licensee must state the reasons for including such additional information.

(6) The predictive gain information must be submitted to the Commission when a license application is filed for a 17/24 GHz BSS space station or within 60 days after completion of critical design review for the space station, whichever occurs later.

(b) A 17/24 GHz BSS space station applicant or licensee must submit power flux density (pfd) calculations based on the predicted gain data submitted in accordance with paragraph (a) of this section, as follows:

(1) \* \* \* In this rule, the term prior-filed U.S. DBS space station refers to any co-frequency Direct Broadcast Satellite service space station for which an application was filed with the Commission, or an authorization was granted by the Commission, prior to

the filing of the information and certifications required by paragraphs (a) and (b) of this section. \* \* \*

(2) \* \* \*

(ii) Indicate the extent to which the calculated pfd of the 17/24 GHz space station's transmissions in the 17.3-17.8 GHz band exceed the threshold pfd level of -117 dBW/m<sup>2</sup>/100 kHz at those prior-filed U.S. DBS space station locations.

(3) If the calculated pfd exceeds the threshold level of -117 dBW/m<sup>2</sup>/100 kHz at the location of any prior-filed U.S. DBS space station, the applicant or licensee must also provide with the pfd calculations a certification that all affected DBS operators acknowledge and do not object to such higher off-axis pfd levels. \* \* \*

(4) The information and any certification required by paragraph (b) of this section must be submitted to the Commission when a license application is filed for a 17/24 GHz BSS space station or within 60 days after completion of critical design review for the space station, whichever occurs later. Otherwise, such information and certifications must be submitted to the Commission within 24 months after the grant of an operating license for a 17/24 GHz BSS space station or when the applicant or licensee certifies completion of critical design review, whichever occurs first.

(c) No later than 2 months prior to launch, each 17/24 GHz BSS space station licensee must update the predicted transmitting antenna off-axis gain information provided in accordance with paragraph (a) of this section by submitting measured transmitting antenna off-axis gain information over the angular ranges, measurement frequencies and polarizations specified in paragraphs (a)(1) through (5) of this section. \* \* \*



(d) No later than 2 months prior to launch, or when applying for authority to change the location of a 17/24 GHz BSS space station that is already in orbit, each 17/24 GHz BSS space station licensee must provide pfd calculations based on the measured off-axis gain data submitted in accordance with paragraph (c) of this section, as follows:

(1) \* \* \*

(ii) At the location of any subsequently filed U.S. DBS space station where the pfd level in the 17.3-17.8 GHz band calculated on the basis of measured gain data exceeds -117 dBW/m<sup>2</sup>/100 kHz. In this rule, the term subsequently filed U.S. DBS space station refers to any co-frequency Direct Broadcast Satellite service space station proposed in a license application filed with the Commission after the 17/24 GHz BSS operator submitted the predicted data required by paragraphs (a) through (b) of this section but before submission of the measured data required by this paragraph. \* \* \*

\* \* \* \* \*

56. In § 25.271, revise paragraph (c)(5) and add paragraph (g) to read as follows:

**§ 25.271 Control of transmitting stations.**

\* \* \* \* \*

(c) \* \* \*

(5) Operators of blanket-licensed GSO FSS earth station networks that provide international service must maintain a control point within the United States, or maintain a point of contact within the United States available 24 hours a day, 7 days a week, with the ability to shut off any earth station within the network immediately upon notification of harmful interference.

\* \* \* \* \*

(g) Licensees of transmitting earth stations are prohibited from using remote earth stations in their networks that are not designed to stop transmission when synchronization to signals from the target satellite fails.

57. In § 25.275, add paragraph (e) to read as follows:

**§ 25.275 Particulars of operation.**

\* \* \* \* \*

(e) Transmission from an earth station of an unmodulated carrier at a power level sufficient to saturate a satellite transponder is prohibited, except as consented to by the space station licensee to determine transponder performance characteristics.

58. In § 25.283, revise paragraph (c) to read as follows:

**§ 25.283 End-of-life disposal.**

\* \* \* \* \*

(c) All space stations. Upon completion of any relocation authorized by paragraph (b) of this section, or any relocation at end-of-life specified in an authorization, or upon a spacecraft otherwise completing its authorized mission, a space station licensee shall ensure, unless prevented by technical failures beyond its control, that stored energy sources on board the satellite are discharged, by venting excess propellant, discharging batteries, relieving pressure vessels, or other appropriate measures.

\* \* \* \* \*

59. Add § 25.288 to read as follows:

**§ 25.288 Obligation to remedy interference caused by NGSO MSS feeder downlinks  
in the 6700-6875 MHz band.**

If an NGSO MSS satellite transmitting in the 6700-6875 MHz band causes harmful interference to previously licensed co-frequency Public Safety facilities, the satellite operator has an obligation to remedy the interference.

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